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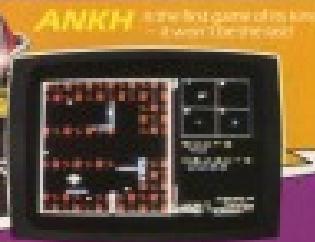
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Press International, 205 East 42nd
Street, New York, NY 10017.

Subscriptions

UK £18.00 for 12 issues, overseas
surface recording, US and Canada
\$19.00 for 12 issues, UK and Canada air
freight £180.00 for 12 issues.



Submitting articles

Commodore Horizons welcomes reader's contributions — either articles or program listings. Articles should be typed double-spaced with a wide margin. Programs should, whenever possible, be printed on one page where paper, accompanied by a cassette. We cannot guarantee to return every article or program submitted, so please keep a copy. If you want to have your program returned you must include an s.a.e.



SUNSHINE

Commodore Horizons is published monthly
by Commodore Books, 200 Park Lane Ltd., Dagenham
Essex RM8 2PL, 20-21 Wellington Avenue,
London EC1, Printed by Whippley Press
Ltd., Thirlestane Way, Whippley, Kent
Dover DA1 4JL, Tel: 0303 8797400, 01303 8797400
Distributed by 001 Distribution, 01-19
Tunstall Road, London E9 7PP (0181 552-1254)
Published at the Post Office as a newspaper
© Sunshine Books 1984.

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EDITORIAL

COMPUTER IS THE latest in a small, but growing, number of databases designed to serve home micro users. Unlike its main rival, Microsoft 880, Computer only serves Commodore users, though the range may be expanded later.

For you to receive a 1200/73 1200/1200 modem, the necessary software protocols and one year's free subscription to Computer. You will be able both to upload your own messages and programs, and download free and commercial software. The modem will also help to prevent piracy, since downloaded software will only run on the system used to access the program.

Computer plans to offer a number of different services, including teleshopping, telebanking and even interpublishing. A range of information providers will be invited to contribute to the system, as will the software houses.

However, Computer's predecessors, notably Computer, The Source and Microstar, have had only limited success. Microstar, for example, was launched in March 1983, but 18 months later only has about nine and a half thousand subscribers. This technology may be here, but the great leap forward still has to be taken.

In part, this is due to the price of modems. The number of people likely to subscribe to networks such as Computer would be a good deal higher if modems cost £50 or less. However, the price of modems does appear to be drifting downwards, albeit slower than we would like.

The other reason why networks have so far failed to realize their full potential is that they have not really made use of the medium on which they are based. Networks do not have interactive facilities which will allow users to link up with each other and with databases. A network which just links the post office or the yellow pages is only displaying services which already exist.

What is needed is imagination, and the perseverance to make the imagination work.

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More book reviews, this month covering the subjects of machine code, getting more from your Vic, and using BASIC subroutines.

Answer book

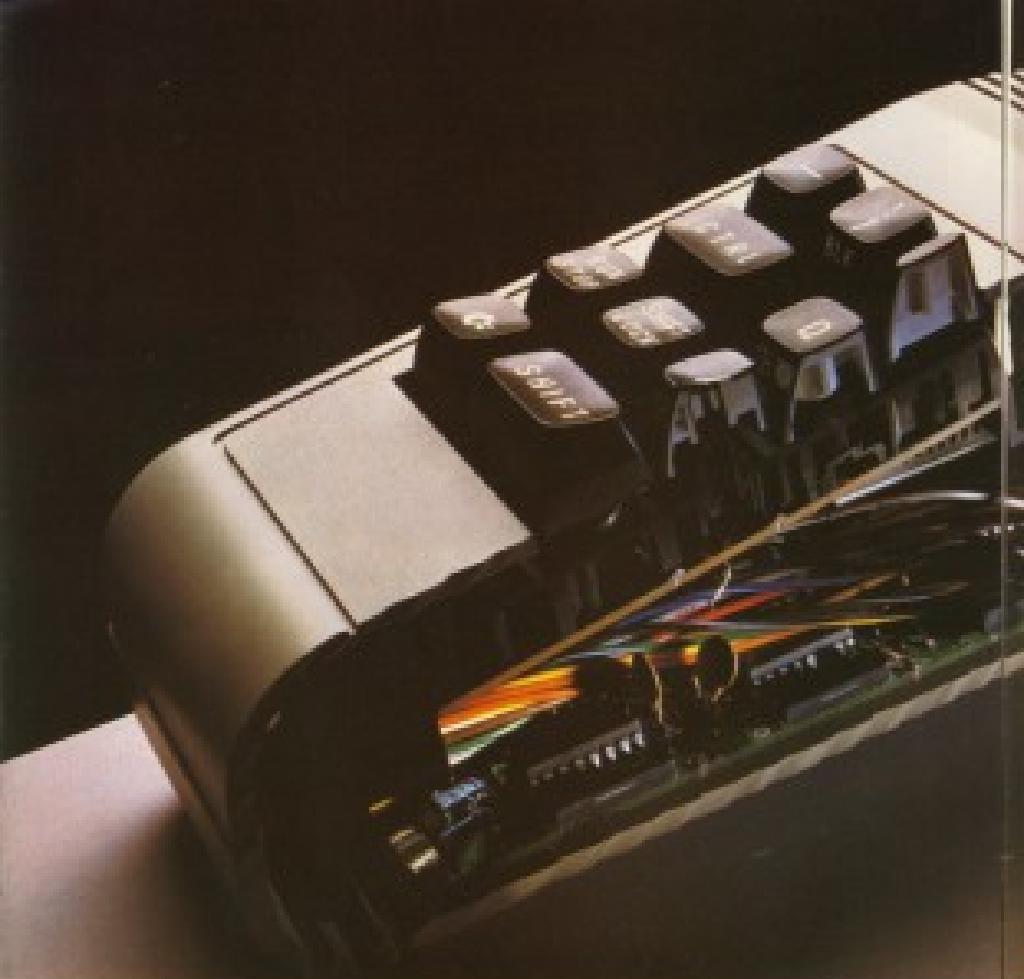
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Jack Cohen once again visits the QWERTY keyboard and tries to answer your most baffling technical queries.

Competition

66

Commodore Graphics Office has readers the chance to win copies of Party Pigeon and Money Man.



Are you only using

To-only play games on a Commodore computer is like asking Albert Einstein to work out the square root of four.

The computer's brain barely ticks over.

To really scratch it, you need more interesting software programs. For example, record keeping, interactive education, stimulating adventure games or word processing.

And for those you need peripherals.

Like a Commodore disk-drive, a really fast storage and retrieval system with a vast memory. Or a Commodore cassette unit, the inexpensive way of loading and storing programs.

For those who like the idea of text and graphics being more alive and having greater clarity than on a TV, there's the Commodore colour monitor.



1/10th of your brain?

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Finally for more exciting games, there are joysticks and paddles.

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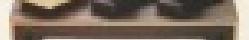
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LETTERS PAGE

Dataview address

I READ with great interest a note from under the heading of "DATAVIEW VALUE" in the September issue of *Commodore Hobbies*.

I shall be grateful if you could contact two points—first both the products mentioned in the news items are published by a new company, Dataview Workshops Limited and secondly the address of Dataview Workshops Limited is 26a Black House, East Street, Cheltenham, Gloucestershire, Telephone No. (0242) 885414.

Andy Fox
Marketing Manager
Dataview Workshops Ltd

PaulH46. Follow this by entering NEW then load or type in second section of program, then enter again in DIRECT MODE! PaulH46, 1.Pakfield.JR.

When LIST is now carried out the two sections of programs will have merged and can be RUN as one program.

This is also possible on the Vic 20 if you first PrintPakH46 and PrintPakH47 then enter the first DIRECT commands as previous. Follow this by entering second section of program and then enter again in DIRECT MODE! PaulH46/PakH47 where X and Y are the values obtained previously.

The line numbers for the two sections must be consecutive as any overlapping will cause duplicate existing line numbers.

Karen E. Morris
Wolfsburg
Tennessee

I don't expect you to print this letter in your magazine and even if you do I won't use it, because after all the hours of turing my hair out I will not be buying your magazine ever again.

Angry
MD J. Rodgers

West Maitland

All Commodore Hercules Software File programs are received on cassette, loaded, checked, printed out, and the printout is reproduced photographically. This doesn't leave much room for mistakes. Since Mr Rodgers wasn't so reading this, perhaps one of his schoolfriends will explain this to him.

We just don't like to hear our own trumpet!

Castlepoint club

MANY THANKS for your excellent magazine. It's a pleasure to have trouble free listings.

I have only been taking your mag for three months but I am frightened to ask about back copies. When did you start?

I would be pleased if you could mention our club. We have formed and we'd like more members. It's the Castlepoint Commodore Computer Club.

The club offers a social library, bulk purchase offers, savings and discounts available by a brilliant young man, Eddie Crockett.

Membership is £10.00 per year, £12.00 if you are married, and £5.00 for visiting which is forthcoming.

J. Eddie
MD Churchill Parade
Caversham
Reading

ALL BACKissues of *Commodore Hobbies*, apart from the first, Dec 82-Jan 84, are available from our subscriptions department.

This is the chance to air your views—send your tips, comments and accomplishments to Letters Page,
Commodore Hobbies,
10-12 Little Memphis
Street, London
WC2E 8AB

Merge solved?

A SUGGESTION I would like to make, regarding a query T.D.W. Summers of Devon made in your Answer Back section regarding merging of listings, is that it is possible to overcome this problem without the need to purchase any specific software.

On the Vic carry out the following—Load or type in first section of program then enter in DIRECT MODE! PakH46, 1.PakH46,

Mister Angry

HAVING purchased your magazine for some months I decided to try some of your programs for my Vic 20. Having spent a number of hours trying and checking they still won't run. I have checked them over and over again and I am 100% sure that they are as they appear in your magazine. I have tried them on three machines and all I get is a mass of symbols on the screen.

Blush blush

IN RESPONSE to a query from T.D.W. Summers regarding a merge routine for his VIC, you recommended a software package from Supersoft.

As the reader was obviously having trouble with his own programs, I was surprised that you did not recommend the excellent book *The Working Commodore* by David Lawrence, published by Random Books.

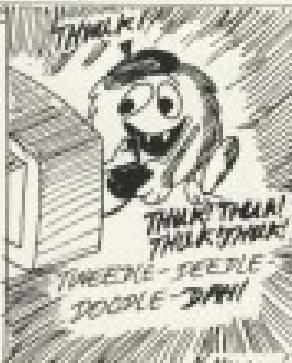
Among the routines listed are "MERGE", "RENUMBER" and "DELETE". At a cost of £3.95 this represents a much greater value than any software product, particularly as there are many other useful routines in the book.

W. J. Christopher

BPA 11

COMPUTER

F
I
K



Making micro music

THE CAPITAL Region Information Centre, part of the Micro-Electronics Education Program, is producing a booklet for music teachers and students entitled "Microcomputers and Music Education".

Following an introduction to the subject, the booklet will contain a list of useful software and hardware currently available, with a full section on the Commodore machines.

Organiser Nick Pickett said that despite the Commodore machines not being approved for use in schools by the Department of Mechanical and Electrical Engineering of the Inner London Education Authority, any information on the subject would be greatly received.

To contribute information or get hold of the booklet, which should be available in September, contact Nick via the Micro Department, Middlesex Polytechnic, Trent Park, Crouch End, Herts.

Mermaid launches disk doctor

NEW COMPANY Mermaid Software has launched the first of a series of educational and utility programs.

Developed in compatibility with the 1541 disk drive and all the format drives including the Petrol (1581),

it's a disk repair program which will retrieve corrupted data, recover data from disks with slight physical damage, and allows the data to be saved on a new disk which is given an identical header.

Mermaid's Harold Wolpert describes the utility as "an invaluable utility for serious disk users, saving hours of work in cases where disks are damaged or worn by excessive use."

Disc Doctor comes with a free blank disk as well as the main

PROGRAMMER, from Mirrortech, is the latest in a line of programs designed to let non-programmers produce games.

Launched at the PCW show, the M. Games Creator is written by David and Richard Darling, authors of the Galactic Game Designer for the Vic 20.

Games Creator comes with three games ready to play; Bounce, Rock'n'Roll and Radio Ra, which cover maze, platform and Asteroids-type scenarios. The program is menu-driven, and allows you to specify the type of alien used, movement patterns,



backgrounds, shooting rules, sound effects, music, sprite shapes, explosions and so on.

Mirrortech's Jim Mack-

enough commented: "Game design languages like BPP's Scope are excellent in their way, but for users who don't want to learn a new language we've put together Games Creator. We think it will be a big success with game players of around 12 years old and upwards, but we've also found that it's a help to more advanced programmers who want to try out game ideas before writing original programs."

Games Creator costs £12.95 on cassette and £15.95 on disk; contact Mirrortech, The Mirror Group, Hatton Cross, London.

Eureka! — £25K reward

EUREKA!, an epic strategy adventure from new company Domark, looks likely to set new standards of complexity — and there's a £25,000 "prize" on stake for the first person to complete it.

Donaldine Wheatley — grandmother of author Dennis — and Mark Stansfield have set up the company with the intent of "marking the names of many people in works of art." Eureka! consists of five adventure games, written by Fighting Fantasy author Ian Livingstone, and five arcade games. All the coding has been done by the Hungarian programmers of Andromeda Software.

The game is released in a single £94.75 package on October 1st, and any mail orders made before then will have a guaranteed delivery date, so as to give it fair chance to all purchasers. Eureka! will be released in shops in a later date.

The epic contains around 3000 of coding, and operates on a multi-level principle. Completing each arcade section allows access to the next part of the adventure, which is set in five different periods of history — Prehistoric Britain, Roman Britain, Celtic Britain, World War Two Germany, and the present day Caribbean.

Your mission is to find the shards of a shattered moon crystal, and the reward of

£25,000 will be paid to the first person to achieve this.

Donaldine Wheatley said: "I'm keeping these plans fairly secret, but some of my grandfather's books would lead historians well to computer games, and we might also do something based on a certain character. There's very little limit to the ability of Andromeda Software's programmers!"

Contact Domark through Tigress PR, 127 Finsbury Park Road, Finsbury, London, phone 01-871 1136.



Donaldine Wheatley — get it

Elite on the street

NEW SOFTWARE company Elite have plans to dominate the Christmas market with two games releases based on US television series currently popular in the UK.

Elite's first release, the eponymously-named *Kingsgate Will*, is a multi-player arcade adventure in which the hero has to reassemble all the pieces of the missing Dragon Amulet. There are over 60 levels, and the program is being marketed as a rival to the popular *Age of Wonders*.

Elite's forthcoming releases are *Bombard* from 20th Century Fox and *Warner Brothers*, and

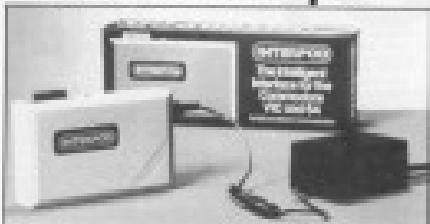
are based on the TV series *The Fall Guy* and *The Duke of Hazzard*. Elite spokesman Steve Wilson said: "We think American programmes are a better bet than British ones, since they seem to appeal to the same sort of people who play computer games. Although these titles have been licensed from America, the software is British. We're hoping that *The Duke of Hazzard* will be the Christmas number-one game."

Elite games for the 64 will cost £49.99 on cassette and £29.99 on disk. Contact Elite at 19 Headford Steps, Walling, 0822 811219.



Screenshot of *Will* — passing you Jim See Will!

The Cheetah, the RAT and the Interpod



Assembled — above by Cheetah Marketing

PARK ELECTRONICS, one of the UK's leading electronics sub-contractors, has taken over the sole marketing and manufacturing rights to Interpod, the intelligent interface for the 80 and Visi divisional of the Oxford Computer Systems.

OCS has recently experienced financial problems, and through the future of the computer software for which the company is best known has not yet been decided, Interpod sources say. Park will be marketing the product, which

provides RS232- and IEEE interface facilities, through Cheetah Marketing, another recent acquisition. Price will be set to £59.95.

Cheetah is best known for a range of software and hardware for the Spectrum computer, but C64 related products are in the pipeline. The first will be an enhanced cartridge joystick, R.A.T., which is claimed to have knocked up impressive pre-launch orders, with the launch set for the start of September.

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Unique feature with the 128K, 160K, 192K, 256K, 320K, 400K, 480K, 560K, 640K, 720K, 800K, 880K, 960K, 1040K, 1120K, 1200K, 1280K, 1360K, 1440K, 1520K, 1600K, 1680K, 1760K, 1840K, 1920K, 2000K, 2080K, 2160K, 2240K, 2320K, 2400K, 2480K, 2560K, 2640K, 2720K, 2800K, 2880K, 2960K, 3040K, 3120K, 3200K, 3280K, 3360K, 3440K, 3520K, 3600K, 3680K, 3760K, 3840K, 3920K, 3960K, 4000K, 4040K, 4080K, 4120K, 4160K, 4200K, 4240K, 4280K, 4320K, 4360K, 4400K, 4440K, 4480K, 4520K, 4560K, 4600K, 4640K, 4680K, 4720K, 4760K, 4800K, 4840K, 4880K, 4920K, 4960K, 5000K, 5040K, 5080K, 5120K, 5160K, 5200K, 5240K, 5280K, 5320K, 5360K, 5400K, 5440K, 5480K, 5520K, 5560K, 5600K, 5640K, 5680K, 5720K, 5760K, 5800K, 5840K, 5880K, 5920K, 5960K, 6000K, 6040K, 6080K, 6120K, 6160K, 6200K, 6240K, 6280K, 6320K, 6360K, 6400K, 6440K, 6480K, 6520K, 6560K, 6600K, 6640K, 6680K, 6720K, 6760K, 6800K, 6840K, 6880K, 6920K, 6960K, 7000K, 7040K, 7080K, 7120K, 7160K, 7200K, 7240K, 7280K, 7320K, 7360K, 7400K, 7440K, 7480K, 7520K, 7560K, 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Words for free

SOFTWARE Publisher Software 'Woods' Limited, producer of the Woodssoft 80 program, has produced a free eight-page booklet summarising the benefits of word processing.

The full-colour booklet explains in straightforward terms some of the jargon associated with the subject, and deals with the ways in which wordprocessing can make or save money for small businesses.

For your copy, write to Alan Ross, Marketing Manager, Derivex Woodssoft Limited, Rock House, Old Street, Colchester, Essex CO3 2RA.

A WORD OF WISDOM



Software's booklet

Stack cuts cartridges



Stack's motherboard and programming card

CERAMIC-DISK software and hardware producer Stack Electronics has cut the price of its programmers' Aid cartridge for the 16. The series of cartridges provide facilities such as Basic automation, fast tape operations, and two pass assembler. The cartridges are recommended for use with Stack's four-slot motherboard

Also newly announced is the Stack 180 series cartridge-based computer. Priced at £14.95 including VAT, it's intended to achieve more professional programming through speeding up Basic software.

Contact Stack at 260-268 Derby Road, Bootle, Liverpool, L20 8LA, phone 051-819 5511.

Cumana talks tape drives

DIGITAL DRIVE manufacturer Cumana, previously best known for its Dragon range peripherals, will launch a "floppy tape" drive for the Commodore 64 and Vic 20 in October.

Development engineer Carl Adams described the system as being "similar to the Winchester system available for the Spectrum, but a totally independent design."

The floppy tape system works using loop micro-cartridges containing 140k inch tape. Various lengths of tape will be available on the micro-cartridges, with a 50 foot tape costing around £1 and having a 5M capacity.

Retail price should be about £119, with an option of connecting another drive at a lower price, as yet unspecified.

The onboard processor will allow the Cumana drives to be connected directly to the Commodore machines with no special interface.

Contact Cumana at Phoenix Estate, Broad Street, Chilford, Surrey, GU1 3RH, 0483-300121.

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THE CHOP SHOP

— sending software on the airwaves

A new Radio 1 computer show and a revised Esperanto for micros — Trevor Taylor explains all to Chris Jenkins

THE BROADCASTING of software — now a familiar concept due to the growth of networks such as CompuServe and BBSes — is also possible in a much more direct form. Transmitting audio signals on ordinary radio wavebands is also possible, though Trevor Taylor met with some scepticism when he first mooted the idea.

"At the time it was working in BBC television, and it occurred to me that if home computers record software on ordinary domestic cassettes, which are fairly poor in quality, considering the quality of our broadcast chain, then we should be able to broadcast software. On *Tomorrows World* we often reported on other people's inventions, and I thought it would be a good idea if we did some inventing ourselves."

Trevor's idea was to broadcast ten seconds of audio signal which viewers could record and load into their computers. "The producer wanted to keep down the amount of this horrendous noise, and decided that ten seconds was all an early evening audience watching the *Top of the Pops* would tolerate — though there were those who thought it may be better than some of the things *Top of the Pops* was putting out!"

Transmission

Though some experts had advised Trevor the system wouldn't work, and others thought it would, the only way to find out was to try it. Two test recorded programs, for the Apple and the ZX80, were to be transmitted, though everything did not go as planned. "The transmission, in December 1982, was fine, and of course it wasn't possible to rebroadcast it. It didn't work in the studio, because we set up a simulation of the program the viewers should have picked up, but the presenter failed to wind the tape back to the start. As a result the radio chain didn't work, and we passed on to the next item. However, the broadcast transmission worked fine before the programme was off the air we started getting phone calls telling us that the program worked, and by the following Monday we had hundreds of mail, many of the letters including ratings of the program. The system proved to be fairly robust,

many people had just placed a microphone in front of the TV loudspeaker, following the instructions in the *Radio Times*."

The program, written by Trevor, required the viewer to type in its name, which then appeared along with those of the *Tomorrows World* team on a scrolling credit display. It was a fairly simple start, and the big problem was that the programs had to be machine specific.

"I then discovered that the British network BSC had been doing this for some time, and had been working on Bascodes, a system by which you could run programs on a wide range of computers. The demand

for more useful programs which had been presented by the *Tomorrows World* transmission gave me the idea for The Chop Shop, combining the idea of transmitting software regularly and having an application as well as hardware."

Holdyseop

Trevor travelled to Holland to talk to NOS, and found that the Dutch program Holdyseop had been transmitting software designed to appeal to electronics hobbyists. "They tended to be technical, and The Chop Shop wasn't going to be that sort of program. Bascodes, the Esperanto of computers, was developed by an NOS technician, a Philips engineer and a programmer with the Dutch equivalent of the Open University. The first version of Bascodes had a lot of problems, many of which were overcome with Bascodes 2. We're now announcing the release of Bascodes 2+ in September, upgrading Bascodes 2 in two ways: firstly in the number of machines it supports, and secondly in the look of it — there are now more menu-based programs."

The Dutch Bascodes always allowed for the Commodore computers, but not for the less popular Sinclair Spectrum, BBCs 2+ nor even the Commodore 64, the Vic 20 (plus 300), and the 3000, 4000 and 8000 series machines, as well as many other popular micros including Acorn, Oric, Dragon, MSX and so on.

"We've also revised the manual, putting it through one technical editor so that it's consistent. The interesting thing is [p



Trevor Taylor — "There should be much more computer coverage"

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Computerworld

STAFFORD **STORY-ON-STORY** **SUPERWELL**

■ that part of the licensing deal with BBC is that we are required to produce Basicode at no profit. That's why the board, and the cassette costs only £1.95, whilst in our production cost, and why it's sold through the Broadcasting Support Service, which is a non-profit making registered charity."

The first series of *The Chip Shop*, hosted by popular TV personality Barry Norman, took some of the BBC's programs and tried to establish the uses of software radio listeners wanted.

"The general reaction was that people weren't too interested in games — they wanted useful programs, though they didn't always tell us what they meant by 'useful'. For the new series we're aiming to broadcast programs which encourage the demand — they either perform some function which allows you to calculate something, or they're instructive in some way."

Trevor maintains that the overreaction to games is not an indication that *The Chip Shop* misses the younger audience — "The last program we transmitted included a questionnaire, and from the replies we think the age range covered is very broad — young users to pensioners. Basicode is not very good at doing games anyway, since the graphics and sound capabilities have to be cut to the lowest common denominator."

Possible future plans include building up a reference library, putting out a program each issue which listeners can use as building blocks for larger programs.

Radio 1

One disadvantage of the first series of *The Chip Shop* was that the software had to be transmitted at a different time to the editorial content. "The software was transmitted at 21 minutes past midnight, four nights a week on Radio 1, principally because we couldn't broadcast for very long at peak times. It raised problems in

that many younger listeners couldn't stay up that late to record the signals, so we're partially overcoming the problem. The new series, starting in September, will have the software transmitted early in the morning, on Radio 1 starting on 20th September at 0515. The transmissions will be repeated the following Saturday at 0515. We think it's socially more acceptable to get up early rather than to stay up late."

Independence

Even though licensing figures for the last series are about 1 million, and with the addition of the Radio 1 slot for the new series this figure should double, the sales were transmission costs can't probably be transmitted at peak times. Even Radio 1 listens to the new slot on Saturday mornings; at 7.15 or 7.45am, wouldn't stand for it! The new 12-minute slot in the *Mark Page Show*, presented by David Freeman, will give a few brief computer news stories and plug the Basicode transmission on the following day. The Radio 4 *Chip Shop* will still be presented by itself. Barry Norman, though Radio 4 will no longer be transmitting the software.

The *Chip Shop* suffers from the disadvantage of being a BBC programme which must demonstrate independence from the BBC computer. "It's a potential minefield for us to go on air and criticize a machine, because we'll be accused of favouritism towards the BBC. For that reason we did very little about hardware specifically in the first series."

Trevor tries to iron out the BBC computer by being produced by an entirely separate company. "I think it's very important that the BBC's commercial interest in one machine should have no effect on the editorial content of *The Chip Shop*, and there's been no pressure put upon me to plug the BBC machine. It's up to me to determine that *Basicode* is 100% independent."

Partly for this reason *The Chip Shop* tends to concentrate on applications rather than "fun". "As far as the Commodore machines are concerned, I don't feel there's any loss to us if we've got a British flag — if the new machines are interesting we'll take a look at them, and if they're good we'll say so."

"We're also in a very different position to a computer magazine, because we have an appeal to an audience which has not necessarily switched on, because they're interested in computers. Frankly the magazines are in a much better position on the review of new equipment than we are — they can devote several pages to it, with pictures, whereas I may only be able to give it two or three minutes."

Format

The new Basicode 2+ has been developed by *The Chip Shop*'s own software engineer with the massive cooperation of the manufacturers of the machines involved. "We also sometimes contract outside programmers for particular jobs."

The new Radio 4 series features a letter slot, a revised format for news headlines, and thirty-second reports from Tokyo and

California. "Aside from that we're sticking very much with the successful format. There are a couple of specials, the first of which is our second week on the air, the 22nd of September, where we're planning a very large outside broadcast from the PCB show in Olympia. We'll have a big stand, and we'll be organizing a number of events which will be recorded and edited for display. One feature is an All-Satellite slot in which a panel of industry celebrities will be available to answer audience questions, with special features on small businesses, journalism and so on. The other special we have planned is a live outside broadcast from Scotland — a sort of Silicon Valley report — and on the 3rd and 10th of November we hope to be live from Tokyo, though that's not yet confirmed."

The Chip Shop consists of Trevor, plus two production secretaries, a reporter, a researcher, a software engineer, a response clerk and the two presenters Barry Norman and David Freeman. The three offices in the BBC's Lambeth building — soon to be demolished to make way for a new broadcasting centre — are packed with computer equipment and stacks of software and press releases. With 120,000 listeners generated by the last series, it's amazing that there isn't more time and resources devoted to computer programs.

Response

"For the first two weeks of transmission we topped the response charts — people were clamouring for the Basicode. *It*, Basicode hadn't even been published, except on the program, through a couple of magazine articles and a feature on ITN. We couldn't afford to advertise Basicode through something like the *Radio Times*, due to the expense involved, but we're still looking at various ways of publicizing it — we're keen for people to fill in order forms rather than just write in to us, since we're anxious that people know exactly what we're offering. All BBC presenters will have order forms, and we're going to try to provide some sort of periodical — but weekly half-pages in the *Radio Times* would cost tens of thousands of pounds."

For the moment you should contact Broadcasting Support Services, PO Box 7, London W1 6SL, for more details on Basicode. Each pack contains a manual explaining what Basicode 2+ is and what it can do, how to load Basicode programs, and how to load broadcast software. The cassette includes translation programs for all the machines covered — you just load up the one for your machine, and tune in to *The Chip Shop*.

Future plans may include Basicode 3, which may handle sound and graphics better — and a TV slot? "I think there should be much more computer coverage — more radio programmes covering more specific subjects, in a TV series — but I don't have that's space for Basicode transmission on TV. Television would be a natural progression, and the broadcasting of software is only one part of what we're doing, and not necessarily the most important part — it's just the one which has caught people's imagination." ■



Barry Norman — Radio 4 host

Mega-zap



THOUSANDS OF 64 owners like nothing better than a "classic" good megagame — or here's one. Zzap 7 from the very capable Megal is claimed to be a version of an American arcade game, brought out as software before it hit the arcades. It's programmed by Mike Wacker of Fire Ant Games.

Promising the nations' details of vector-powered position accelerators and Data-chase distance spheres, what you're left with is a "through-the-windows" game of various effects. On-screen readouts indicate your pod's status as you fight off the hordes, which manifest themselves in waves of various monsters and stages, including the good old Starship Enterprise.

There's not much more to say about Zzap 7 ... it's very straightforward, with some good sound effects and excellent scrolling backgrounds. A good but far alien megagame.

Program: Zzap 7, etc.

Supplier: Megal, 90 Regent Street, London

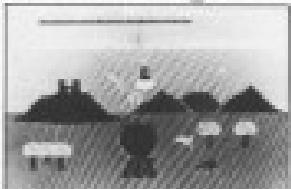
Price: £7.99

Graphics: 7

Sound: 5

Gameplay: 6

It's magic



WEY VALLEY SOFTWARE'S Merlin owns something no Ultiman's Jet Pac, or that the object of the game is to fly around the screen picking up treasures and depositing them safely. There the similarity ends, as that Merlin depicts you as a cloud-riding wizard rather than a jet-powered spaceman. The focus of Bell set out to stop you, and to combat them you must fire magical lightning bolts and collect seals, gems, Hogs' legs and so on to power your jet. It's feasible manage to parachute into the port that your force is raised. A good game, the only reservation being that each of the four scenes is broadly similar. Still, well worth having.

Program: Merlin, etc.

Supplier: Wye Valley Software, Parson House, Kimmersley, Herefordshire

*Soft * * Hits *

The good, the bad
and the ugly reviewed by
our hard-playing team

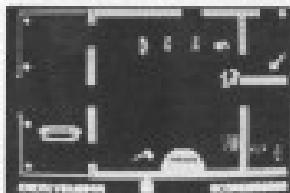
Price: £6.99

Graphics: 7

Sound: 6

Gameplay: 6

Gothic, novel



THE EVIL DEAD is the first release from the distributor Palace, and has received a lot of media attention due to its associations with the splatter movie of the same name. Fortunately the game itself is all good healthy fun, and though there aren't any great surprises it's the kind of thing which can keep you playing for hours.

An introductory blurb explains the scenario: a home parameter house viewed from above, in which you must protect your four friends and yourself from attack by the spirits of the Evil Dead. Various weapons can be picked up to help you in your fight, but beware possessed human split into four fearsome segments.

The battle to avoid dismemberment is

fast and furious, and overall Evil Dead is an excellent debut from Palace Software. Great spooky Gothic music too.

Program: The Evil Dead, etc.

Supplier: Palace Software, 273 Pentonville Road, London

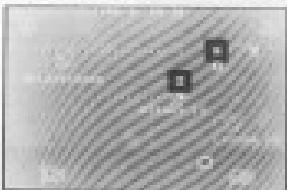
Price: £5.99

Graphics: 7

Sound: 7

Gameplay: 8

Half and half



WITH STRATEGY and simulation games rapidly overhauling straight shoot-'em-ups in the popularity polls, it's no surprise to see that some of the best games now coming out combine elements of both styles.

Catch Baitie of Midway from PSS and you'll see a perfect example. The game is a simulation of the crucial WW2 USA/Japan air-sea engagements. The manual — which I've seen only in preliminary form — explains that although the game is not exactly complex, it needs some study. This is quite true. The main screen shows the deployment of various air and sea forces, and you use your cursor to direct the movement of your US forces. Your task is to defend the island of Midway and sink Japanese aircraft carriers.

An air attack on the island is depicted with a series of small rectangles in which plane zoom through the air trying to avoid poor tracer fire.

A short review like this cannot serve to give anything other than a brief idea of what promises to be an exhilarating game.

Program: Battle of Midway, etc.

Full steam ahead



A TONY CROWTHER spectacle, Loco establishes itself immediately as a classic. The top section of the screen depicts an old-time locomotive chugging across a beautifully-drawn background, while the lower section gives a map of the rail layout. Using the joystick to select tracks, you must avoid explosive lakes, volcanoes and

attacks from aircraft and zeppelins. Sound effects and steam blasts add to the fun, but you must make it to a refuelling depot before you grid to a halt and become a sitting target.

Wonderful music slipped off from Jean Michel Jarre, and attractive graphics (not outstanding, but well designed), make Loco a success. One of the rare cases where the box illustration doesn't give an inaccurate idea of the game, and there are screen shots too.

Program: Loco, etc.

Supplier: Adagio, 178 West Street, Sheffield

Price: £7.99, disk £11.99

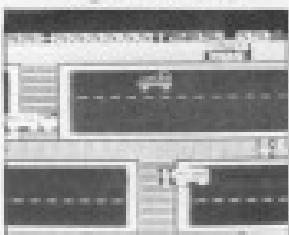
Graphics: 9

Sound: 9

Gameplay: 9

Supplier: PBS, 401 Stoney Stanton Road, Cheshire
Price: £9.95 case, £12.95 disk
Graphics: 8
Sound: 6
Gameplay: 9

Psycho 8K



PREDICTING games for the 8K is difficult. Predicting good games for the 8K you is very difficult. Predicting them at £12.95 must be near impossible. Mastertronic has done it with Psycho Shopper. Sorry if this sounds more like an advert than a review, but that's the way it goes sometimes...

As you'll see from the screen shot, the graphics are slightly less respectable, and there are four screens — although it's so hard to get across the busy road in screen one that I haven't got any further. Roads include vicious Grammarians, deadly traffic and runaway steamtrains, and policemen Arthur must collect gold coins on the way to the supermarket.

A goodly, and a clear improvement on Mastertronic's first batch of games. Let's hope there are more to come.

Program: Psycho Shopper, Vic+8K
Supplier: Mastertronic, 48 George Street, London

Price: £12.95
Graphics: 8
Sound: 5
Gameplay: 7

Take a fall



THE ORIGINAL and possibly, and still the best, despite numerous imitations, Pitfall by Activision offers hours of play for the dedicated joystick basher. As Pitfall Harry you race through a seemingly never-ending jungle avoiding snakes, tar pits, alligators, fire, traps and spikes, searching for treasure and trying to beat the 30 minute limit.

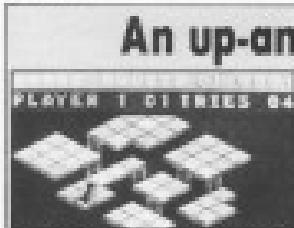
This one really is a classic, though its sets are few, lights, no graphics or sound. Strategy and timing is all, and there isn't a problem accelerating hyper-blaster in sight, thank goodness.

Program: Pitfall, 64
Supplier: Activision
Price: £9.99
Graphics: 6
Sound: 5
Gameplay: 9

Go West



YET ANOTHER new company, Talon, and another interesting range of products.



PROGRAM once again that the state-of-the-art programme comes from the good old U.S. of A., Statsoft's Flip & Flop has a new look in perspective graphic programming. Statsoft is a new company which is licensing US games and adding in distributor and new packaging. The results should be excellent.

Flip & Flop is set in the Zoo of the

future. You play two characters, Flip the Kangaroo and Munch the monkey. As in various Q*Bert derivations, you have to jump from block to block until you've stepped on each section of the five main platforms. Then the game does an amazing flip-flop, and you find yourself as Munch the monkey hanging underneath the platform. Later stages involve flying over and angry zor-bangers.

Great music, plenty of the Q-banter, nice sound effects, please and buy it.

Program: Flip & Flop, 64
Supplier: Statsoft, Business & Technology Centre, Business Drive, Stevenage, Herts.
Price: £12.95, disk forthcoming at £13.95
Graphics: 9
Sound: 9
Gameplay: 9

West is a text adventure with graphic interfaces, set in 1884. You are on the trail of a gang of robbers. The usual adventure conventions are adhered to, and the vocabulary seems to be good, around 200-300 words.

There are a few oddities — in particular, if you don't type "SHOOT" quickly enough, your life isn't worth a plugged nickel. There's also a section where you play posseman with the robbers, and an odd feature by which if killed you return to the start, and will eventually find yourself standing over your own corpse.

Lovely graphics, drawn with Talon's Paintbox system, but only the one scene that there been more West would have been over here.

Program: West, 64
Supplier: Talon, Curzon Building, 101-103 James Road, Glasgow
Price: £12.95
Graphics: 9
Sound: 5
Gameplay: 8

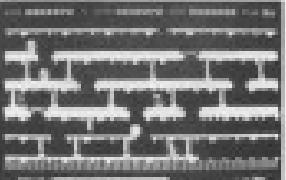
Pigeon pie



ANOTHER new company, Creative Graphics, has produced Petty Pigeons. Like Aladdin's Loco it's by Tony Crowther, and like Loco it's loads. Petty the pigeon flies through a zooming landscape of motorways, computer shops and caravans, picking up targets to add to his nest. Cars, lorries, tanklike ploughs and zig-zagging squares serve as levels up the action, and Petty makes his nest by recycling ingredients. His nest needs nine levels of difficulty. Look out Jeff Miles, the pigeons are coming.

Program: Petty the Petty Pigeon, 64
Supplier: Creative Graphics, Alpha House, 10 Curver Street, Sheffield
Price: £7.99
Graphics: 9
Sound: 9
Gameplay: 9

Ice scream



I'D NEVER THOUGHT that boulders and

Continued on page 24

VIZASTAR 64

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platform games would have had their day by now, but *Avalon* wishes to continue as otherwise with the *Hawser*. The scenario is unusual — how many other games can you name in which the hero is an Eskimo (except on a postcard to Commodore Computing International)? The hero, Thorax, has to traverse the tundra in search of ice blocks, which have to be carried on the raft he has built. Dragons and mutated animals try to stop him, but can be killed by dropping blocks on their heads or paralysing them with the help of a Power Pill. Many *Avalon* games are innovative — this doesn't happen so frequently. It's a fun game for all that, and fans of this kind of program could do a lot worse.

Program: Ice Hunter, £6
Supplier: Avalon, 9 High Street, Hovey, Surrey
Price: £6.95
Graphics: 3
Sound: 2
Gameplay: 6

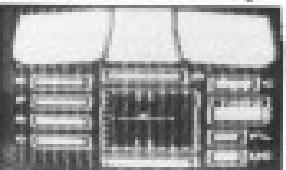
Space squaddie



WRITTEN BY Oxfordian Member of 64-Comer Book Team, the Periodic-powered *Star Trooper* is another megapropper, mentioned as far as I can observe in *Hawson's Starving Trooper*. The best intergalactic yet (not with the Queen's offering next month), and also of unsurpassable graphics. Armed only with a berzerk and a laser gun, fly around, impregnating aliens, and try to dock with a mothership to replenish your fuel. Not bad.

Program: Star Trooper, £4
Supplier: Microcourt House, Castle Yard House, Castle Yard, Richmond
Price: £7.95
Graphics: 6
Sound: 4
Gameplay: 6

Bombs away



FOR THOSE of you who have asked (repeatedly) for a flight simulator for the

BBC VHS, here it is. Bearing in mind the limitations of the machine, *Bomber Mission* is excellent — good colour, interesting screen display, plenty of options and a challenging game.

You pilot a WW2 heavy bomber, and must select a target and a weapons load before taking off. The joystick and Function keys are used for moving and control of throttle and flaps. Attacks by enemy fighters, which can be shot down using your radar screen, can cause damage or simply a fuel leak. As with all good flight simulators, after attacking the target and flying home you face the harder part — landing!

Program: Bomber Mission, VHS + £6.95
Supplier: Commodore
Price: £8.95
Graphics: 8
Sound: 3
Gameplay: 8

Think political



DISTRIBUTOR Amplus has set up a division called *Ballotline*, which intends to concentrate (good) on thoughtful strategy games rather than on apoplexy. First offering looks like *Time Quest* and *Election Trail*, which is a simulation of the American elections. The game, for one or two players, is menu-driven and features convincing map displays, fund-raising, opinion polls and hidden voting factors after the outcome, and after 20 rounds each side's votes are counted and the result declared.

Introducing us to a company dedicated itself to more intelligent games, *Election Trail* is a particularly good work if you have ambitions to be the next Ronald Reagan.

Program: Election Trail, £4
Supplier: Blue Chip, Amplus Group, Richmond Road, Brighton
Price: £7.95, disk £7.95
Graphics: 3
Sound: 2
Gameplay: 6

On the run



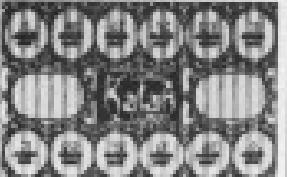
ONE OF MANY compilations of athletic

events currently available for the 16+ including Database's *Micro Olympics* and Ocean's *Daley Thompson's Decathlon* ... the Acorn version of *Decathlon* is faced with stiff competition. Based on the usual Track & Field, Decathlon features all ten events, including the sprints, hurdles, long and high jump, shot put, discus, javelin and pole vault.

Each event is represented in marvellous graphics with top-class animation. The only possible criticism is that the method of joystick control is very awkward — you have to wobble the stick back and forward to make your athlete move. Admittedly I can't think of a better method, and all the Olympic games have adopted it, but it's a pain.

Program: Decathlon, £4
Supplier: Amplus
Price: £8.95
Graphics: 9
Sound: 2
Gameplay: 6

For mutant camels



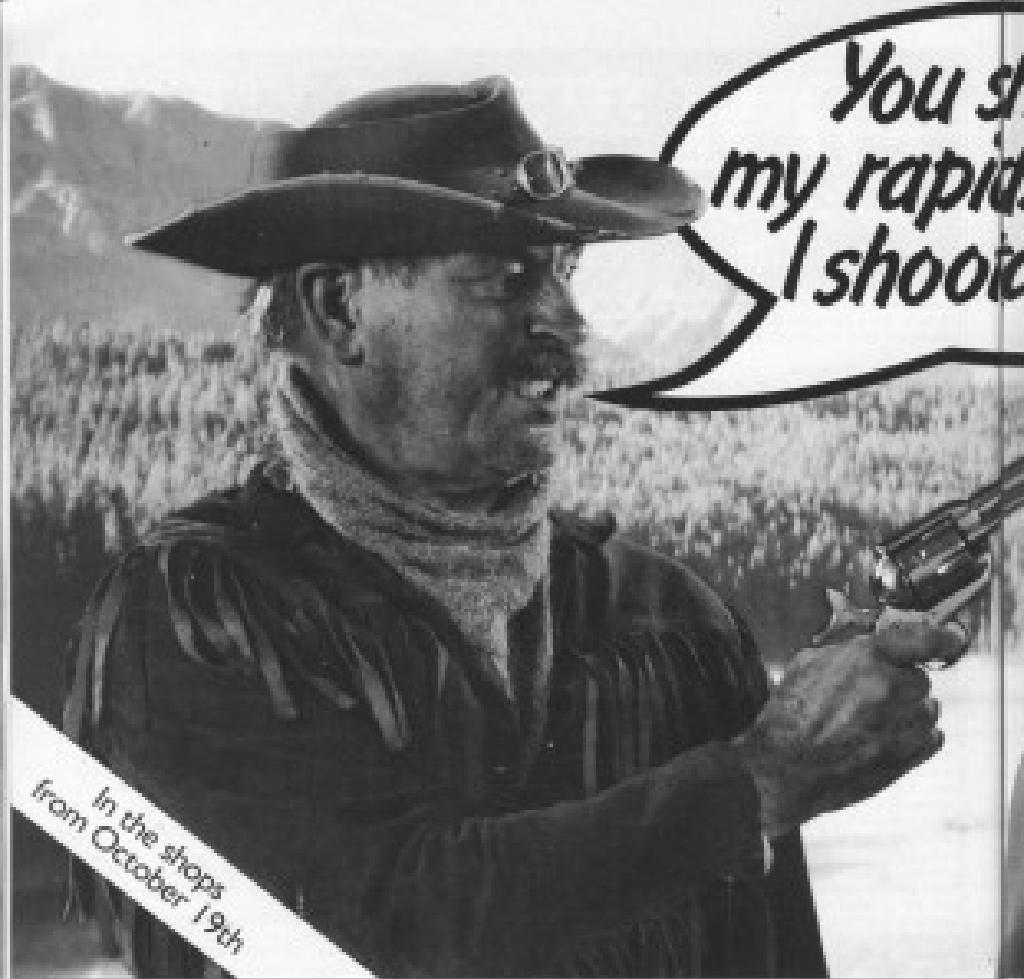
ANOTHER from Talent is *Kalah*, supposedly based on a traditional Arab game. It presents you with two sets of six 'pits', with a larger pit at each end of the two rows. Each of the 12 small pits is filled with a number of stones, and the aim of the game is to move the stones from pit to pit until you gain some obvious numerical advantage.

Nice graphics and bush music, but nice graphics and music do not a good game make, and Talent would be better advised to ignore Arabs offering them a good time in future.

Program: Kalah, £4
Supplier: Talent
Price: TBA
Graphics: 8
Sound: 5
Gameplay: 4

MORE NEXT MONTH!

SOFTWARE COMPANIES — send your news items to SOFT HITS, Commodore Horizons, 12th Little Margaret Street, London WC1R 3LJ.



You see my rapid I shoot

In the shops
from October 1985

CLIFF HANGER

AUTHOR - JAMES DAY ORIGINAL MUSIC - BARRY DOD

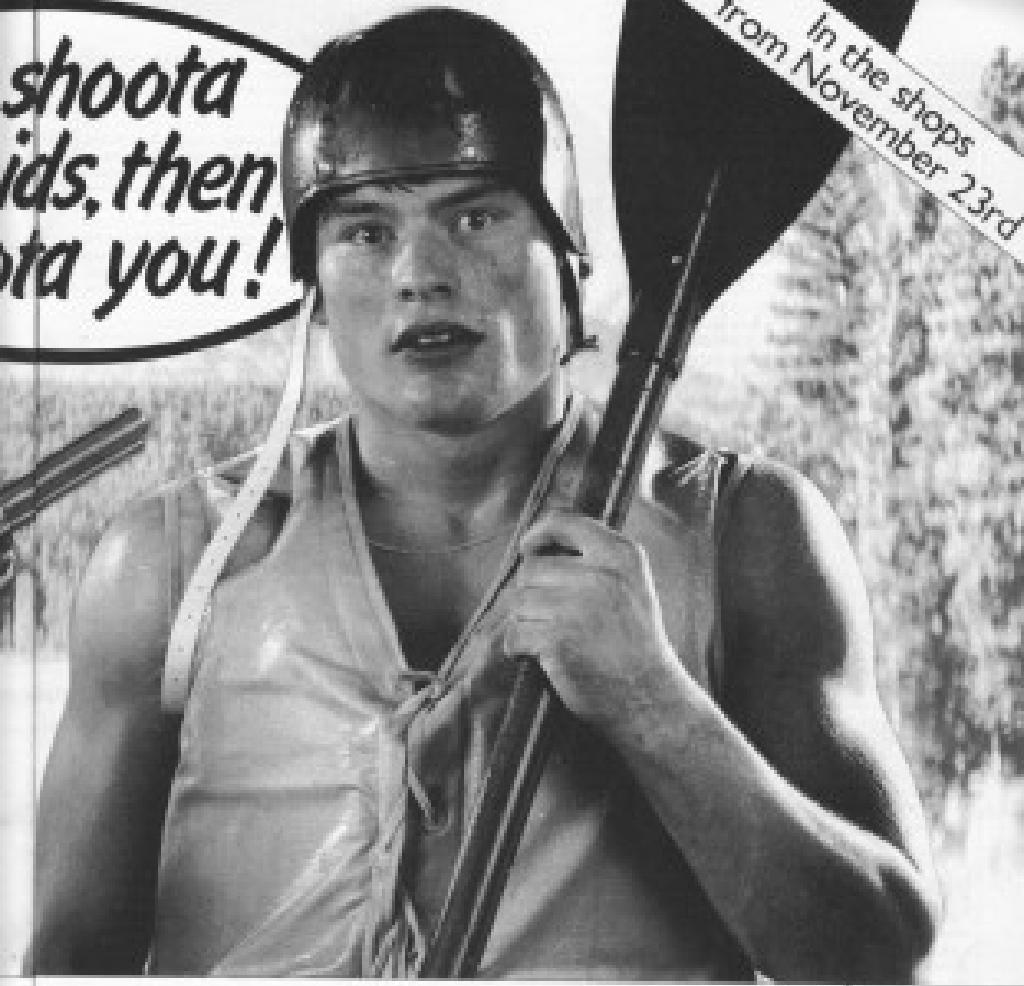
Thrill to the cartoon-style action of Cliff Hanger, a really original, Wild West game. As Cliff the hero, you've got to stop the bandits shooting up the canyon. But with its own brand of wacky cartoon action fun, things simply aren't as they seem in

Cliff Hanger. For a start, the boulder you throw at the old bandit may just come bouncing back at you.

Cliff Hanger incorporates all the elements that have made New Generation games best sellers for the Spectrum, such as original ideas, superb graphics and hilarious happenings - but now it's available first for the Commodore 64. Featuring 32 separate screens, three levels of difficulty, one or two players scoring, Hall of fame and joystick compatibility or user defined keys, Cliff Hanger is set to be THE Commodore games playing sensation. Available from any good software store for just £7.95.

*shoota
ids, then
ota you!*

In the shops
from November 23rd



Shoot the Rapids

AUTHOR - PAUL BURN

Ever wondered what it would be like to face the fierce white water in a top class canoeist's slalom run? Well wonder no more because you can enjoy the fast action thrill of competitive canoeing from the comfort of your own armchair with *Shoot the Rapids*.

It's a game that involves real skill because you must move your joystick to simulate paddling actions. You must get through the gates of the slalom course in the fastest time possible, while avoiding the river bank and rocks. There are also extra hazards like rogue speed boats and insatiable beavers to worry about.

This multi-level game features increasingly difficult river courses with superb graphics and smooth scrolling along the river. Qualifying times have to be reached to move onto the next course. With Hall of Fame, one or two player scoring and joystick compatibility, *Shoot the Rapids* is probably the best sports action simulation game devised to date. Available from any good software store for just £7.99.


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EVERYONE knows the pirates — they are easily recognizable by their wooden legs, discolored pants, nailed to their chests, and their language: "Aah! This land . . ." "Eh, you mean SO&P? WARP pirates! Well, they speak a different language, don't they?"

There has recently been a lot of talk and some action about software piracy. The talk has been about crooks who copy commercially marketed software. The action has involved a few court cases by established software houses.

I'm not going to sit myself up as judge, for or against copying, but I will express my opinions in general.

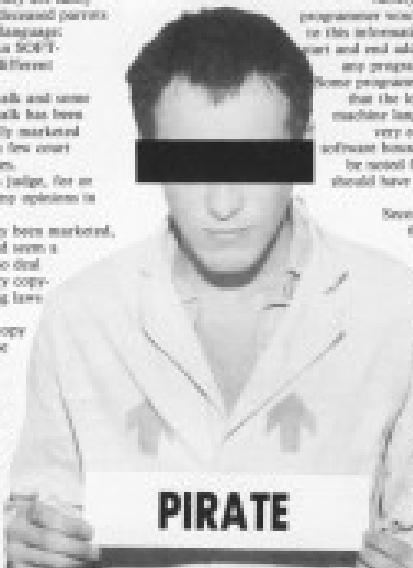
To copy software that has already been marketed, and re-market it in any form, would seem a clear case of theft. The law ought to deal with this area as it does with literary copyright. In fact there are some existing laws that try to cover this area.

To buy a piece of software and copy it for a friend or to put it from tape to disk is not so clearly a case of piracy.

The large game companies claim that they are losing millions every year from such copying. Of course if software companies start taking individuals to court, then they are only making a copy for "Free" down the road, to present them with at least a large PR problem. How do they justify pressuring their customers?

The only other avenue open to them is to protect their software. What's that? Did I hear several large software companies screaming, "But we do". In six years I have seen just two pieces of software which have been seriously protected, and in the last event I owned 300 discs, all original!

Of course people want to put their favorite games or utilities on disk, and good protection could allow that.



PIRATE

houses along with their copying services.

Whilst this might be a good idea and a good deal, you may well get a better deal in the long term by having each program individually protected to ensure that it will take anyone a good deal of time to break into or copy it.

A note here for readers and software houses — apart from the coders already

various of ways could copy it. Any good programmer would not allow the luxury of access to this information. It is very easy to have the wrong start and end address placed into the tape buffer with any program in the header virtually unavoidable. Some programs have such weak protection on them that the loader may be put at by a load from a machine language monitor, which makes copying

very easy and is careless on the part of the software house. There are a few points that should be noted for use in any program. The first file should have an auto-run with conflicting start and end addresses.

Second, every program can be assembled, the stop key should be disabled where possible, and programs should be hidden with checks in the code for a proper load.

Included here are a few limited programs to help you get the elements of protection and to encourage software houses to produce protection that will be unbreakable!

The first program is an autorun — it is set up to save a Basic program with an autorun on it. It is by no means foolproof and could be enhanced in many ways, but it does give the general idea. There is a checksum of the code for por-to-poly and a Basic loader to make things easy. The Basic loader should be erased and saved. On reading, it checks will be made for correct entries. If all is well the program will give you the format for saving a program. The checksum is optional.

In general, the program stores the start and end addresses of the program to be saved. Next, a piece of code is transferred to \$0000 but erased and the basic pointers changed to enable it to be used. The basic pointers for the program in RAM

Software Protection

If we just talk about the dot, there are now copiers that allow you to copy from tape to disk, disk to tape, tape to tape and disk to disk. There is also a utility which will allow you to Turbo load your programs, but that turbo loader offers no protection at all, they simply speed up loading times!

Of course the companies that are producing the copiers are getting a lot of disk from other software companies, and magazines are in cases being asked rather strongly not to carry ads for such products.

The most sensible course of action for anyone wishing to prevent piracy of your programs, is to prevent it by protecting the programs properly.

This is not simple, but is possible. The best place to start is by always knowing what the competition is offering to the public in terms of copiers. This will enable a good programmer to ensure that the latest range of copiers will be useless against your programs. Data copying companies are currently offering protection to software

mentioned, there is the faithful audio copy. On most systems this is fairly easy, but the 64 is fairly fussy about the levels used, and whilst audio copying remains a possibility it is difficult.

There is a way of preventing against audio copying, but the general opinion is that the expense involved in doing this is not great.

The first thing anyone wishing to copy a program from tape will do is to try to load the first part and glean as much information as possible. For different reasons this is usually difficult. If a program will not load and be examined then the following command will give you the header information:

(OPEN[0]C000)

In direct mode this will find the first header and stop the tape. At this point the name of the program and the start and end addresses are to be found in the tape buffer.

There may also be a program loaded in the header. At this point you do have a lot of information about the program and in a

are then revised, and another save is executed. When the program is loaded in will auto-run, disabling the stop key, loading and running the new program on tape.

As mentioned before, this is not an unbreakable auto-run, but it works! An addition to this might be to scramble the program to be saved and to unscramble in before execution; the extra code needed would look like this:

LDA #100
STA 100
LDA #100
STA 100
LDI LDY #100
LDI LDY (\$100)
BPL #100
RTA (\$100)
INY
BNE L1
INC BPC
LDA BPC
CMP #100
BNE L0
RTS

mixed toggles — a red lining. Hang on with this one, we are code that you have!

Finally, a machine code routine that points to a BASIC program elsewhere in memory, so that when it is loaded and fired, only an SVS number is visible.

There is a disassembly listing and a memory dump included — the disassembly listing looks a little odd, but all will be revealed. This easiest way to enter it is by using the memory dump. To do this enter the following from your monitor:

16 0000 0000

This will display the necessary locations. Now enter the \$TH dump from the previous page.

Having done this, save it off and then pull the monitor and list the program. It all will you should be presented with the following:

16 SVS2000

A little explanation is needed here. Locations \$0000 and \$0001 hex are set to the end of the program which is \$0008 hex. Locations \$0002 and \$0003 are the first two lines of memory (zero in this case). The \$00 hex at location \$0004 is the SVS instruction and locations \$0005 or \$0006

HEX	BIN	HEX	BIN
\$0000	00000000	\$0001	00000001
\$0002	00000000	\$0003	00000000
\$0004	00000000	\$0005	00000000
\$0006	00000000	\$0007	00000000
\$0008	00000000	\$0009	00000000
\$000A	00000000	\$000B	00000000
\$000C	00000000	\$000D	00000000
\$000E	00000000	\$000F	00000000
\$0010	00000000	\$0011	00000000
\$0012	00000000	\$0013	00000000
\$0014	00000000	\$0015	00000000
\$0016	00000000	\$0017	00000000
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C803	AF	ED	LDA	#48ED	C895	AA		TAB		
C803	BB	32	83	STA	#803232	C897	A8		TAY	
C806	AF	F3	LDA	#48F3	C898	28	8A	FF	JBR #FFFB4	
C808	BB	33	83	STA	#803333	C899	AF	88	LDA	#4888
C809	AF	83	LDA	#4883	C89D	A2	88		LDX	#4888
C80F	BB	82	83	STA	#803882	C89F	A8	88	LDY	#4888
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C844	BB	83	83	STA	#803883	C8A4	AF	F8	LDA	#48F8
C847	AF	88	LDA	#4888	C8A4	BB	28	83	STA #803238	
C847	BB	90	STA	#4890	C8A9	AF	F8	LDA	#48F8	
C848	AF	81	LDA	#4881	C8A9	BB	28	83	STA #803238	
C849	A2	81	LDX	#4881	C8A9	AF	82	LDA	#48882	
C84F	BB	81	LDY	#4881	C8B0	BB	28	08	STA #803238	
C871	BB	8A	FF	JBR #FFFB4	C8B3	AF	88	LDA	#4888	
C874	AF	88	LDA	#4888	C8B5	28	08	FF	JBR #FFFD0	
C874	BB	8D	FF	JBR #FFFD0	C8B8	84	28		STX #2D0	
C877	AF	20	LDX	#4820	C8B8	84	2F		STX #2F	
C878	AF	28	LDT	#4828	C8C2	84	31		STX #31	
C879	AF	28	LDA	#4828	C8C6	84	38		STY #28	
C87F	28	08	FF	JBR #FFFD0	C8C8	84	38		STY #38	
C882	48		RTS		C8C8	84	32		STY #32	
C883	AF	83	LDA	#4883	C8C8	AF	F8	LDA	#48F8	
C885	BB	82	83	STA	#803882	C8C8	BB	28	83	STA #803238
C886	AF	A4	LDA	#48A4	C8C8	AF	ED	LDA	#48ED	
C888	BB	83	83	STA	#803883	C8CB	BB	28	83	STA #803238
C889	AF	88	LDA	#4888	C8CE	AF	88	LDA	#4888	
C88F	BB	90	STA	#4890	C8D8	28	88	A8	JBR #4888E	
C8F1	28	08	FF	JBR #FFFD0	C8D8	28	88	A8	JBR #4888E	
					C8D4	4C	AF	87	JBR #487AE	

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Drawing on the 64's artistic abilities

C P Whitcher looks at three graphics packages — two for budding painters, one for handling sprites

NOT DOUBT, dear reader (in common with most other 16-bit owners) you have a love-hate relationship with your electronic marvel. We all know that the 64 has excellent sound and graphics capabilities, but we are also painfully aware that it is not easy to get the best out of this machine. Four not? Help is at hand with an ever increasing number of software packages designed to do away with some of the more complicated procedures required by CBM Basic. Three such offerings are Paint Pic, from Raines, Paintmaster from Taitan, and Microsoft's Go Sprite.

Paint Pic is a colour-based colour drawing program, which offers you a blank screen upon which you can let your artistic talents run wild using a crosshair cursor as a pen. There are 4 different coloured pens available at any one time, enabling you to draw in 3 colours (pen 0 is the background colour) in the mode of 8 colours. Pen, border and eraser colours can all be changed by single key operations. In 'pen' mode you are drawing points or lines of any size. In 'brush' mode this can be expanded to give thicker lines up to eight dots wide. Other commands available in this mode allow you to have 3 colours on the brush at the same time, which can be rotated along the brush length to give repeated colour patterns.

Help!

There are various 'standard' shapes which the program will draw for you, including Straight Lines, Triangles, Circles, Ellipses and Arcs. All the closed shapes can be 'pen-filled' by switching on the appropriate colour before pressing the required command key. In addition to 'pen' and 'brush', there is a text mode which permits the use of the 64 characters set anywhere on the screen. If you have drawn something that you particularly like, you can duplicate it, either as it is, larger or smaller, the same way round or inverted.

Although it is possible to draw quite pretty pictures with Paint Pic it is rather slow and generally not very impressive. The HELP screens are poorly designed and, as such, are no HELP at all. The same applies to the manual. At £18.50, I find Paint Pic mediocre. Contact Raines at Unit 13, Horncastle Park, Hockerton Road, Longfenton, Nottingham, NG10 1LQ.

Paintmaster, on the other hand, is really

rather good. While the user was heading I skipped through the manual and was pleased to see that it was well written and quite easy to follow.

The first screen presented is a menu of all the (1 or 2 key) commands along with their functions (see PC/16 Colour). Hitting the SPACE bar will take you to the Picture Screen. Here again and it's back to the MUSE!

At the bottom of the Picture Screen is a 'title line' which gives the program status, e.g. current cursor position (x,y), foreground colour and texture selected and one or two other bits of useful information. If you want to use the bottom eight lines of the picture you can turn the 'cols' off.

To move the cursor about you use the cursor keys or (these still) a joystick in Port 2. It moves in quite a steady pace at first, but things get tad less refined if you hold the stick over! Pressing the PKEY button will place a dot in the current position. You can make a point by selecting the background colour and overwriting the error. To draw a trail of points, just hold down PKEY and keep going!

If you make a complete hash of things

you can 'Wipe' the whole screen before starting again. For those with something less than 20/30 vision, the pens around the cursor can be magnified. And the job for those imported little pictures? As with most programs of this type, you don't have to worry about trying to draw 'perfect' circles, etc. All the 'regular' shapes are taken care of for you. Drawing an ellipse, for instance, only requires you to mark the 2 PKEYs and a point on the circumference. The rest is done for you.

On discovering some of your lines in the wrong place, worry ye not. Type Z and 'Hit' any part of the offending shape with the cursor ... it simply disappears. Painting is complicated with Paintmaster. From making pretty coloured patterns is easy, using the DT (Define Texture) command. A Texture (in this instance) is a block of 64 (65536 pixels filled with dots in the pattern of your choosing. You can Define 25 of these blocks, labelled 1 to 25; a slight bug here displays them in the wrong order, but never mind).

Plsola

Select your Texture block whatever you wish and place anywhere on the screen. Shapes can also be filled with these blocks in place of 'straight' colour. A set of BLOCK commands prevent the manipulation of any particular block in a different part of the screen, either as an identical copy or as a mirror image (horizontal or vertical). To move a block a small distance the Drag command is the answer. To create a block and block these (what else) which clear the marked section but leave the rest of the screen intact. A DEL command allows the use of any letters or numbers from the keyboard. You cannot use the Graphic symbols, although this does not present any problems as you can make your own Graphic characters using the Define Texture routine.

When you finish your picture ▶



Paint Pic — pretty pictures if you have the patience

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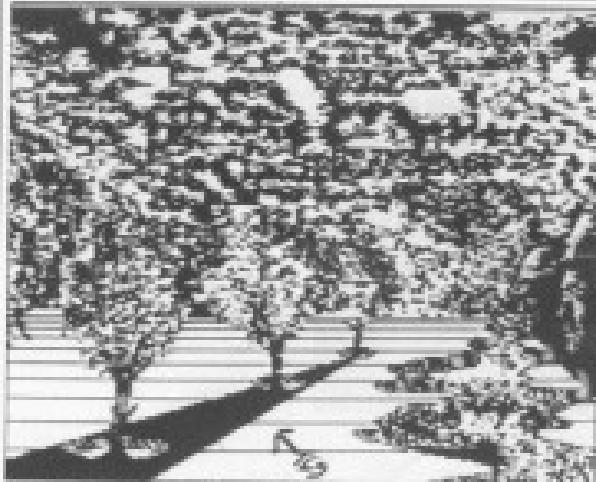
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Paintman — pleasant scenes, good images!

■ You must remember that a block of 8x8 pixels can only have 2 colours, 1 foreground and 1 background. Each can, however, have any combination of all the available colours so there is plenty of scope for the more artistic amongst you. It is, perhaps, advisable to share your original sketch on top of the checkered screen colour scheme. This will show you where the sides of each colour block are so that you can get as many of your lines as possible to coincide with these edges. With a combination of good colour schemes, Define Tintes, a little imagination and your own unabashed ability, excellent results can be obtained which you can save on Tape or Disk for later retrieval.

As you have, no doubt, gathered I liked this program a lot. It was fast! It's very easy to follow and even I managed to get the hang of it quite quickly. As I mentioned before, the manual is unusually good. Full Marks... almost. I didn't like the constantly flashing cursor, but then I've yet to find something to moan about, hasn't it? Price is £17.95 on tape or £19.95 on disk. Contact Taken at Curves Building, 105 St James Road, Cheltenham, GL50 2LB.

Sprites

If you've ever tried programming the crowded sprites into your BBC, then you will know what a jolly task it is! Anything that promises to reduce some of the drudgery involved has got to be worth a look.

Co-Sprite is a cassette program that enables the user to draw up to 32 sprites on the screen and try them out in any sequence. The first screen shown is the one on which you draw the object of your fancy. This is made up of an enlarged grid for drawing and a sprite display box which shows what it really looks like... right size and colour! and a set of command keys. All that is required to enter an instruction is for you to place the cursor

over the appropriate icon and hit the View button. Along the bottom of the screen is a Paint Bar; the colours being selected in the same way as commands.

Each square on the large grid represents one dot of the sprite which will appear in blue when 'bit' on in white (background) colours when in blue mode. When drawing in the Hi-res mode you are limited to 2 colours... 1 foreground, 1 background. In Multicolour mode there is the added attraction of 1 foreground and 1 background, but at a price. The definition is not as good because each vertical column is now 1 dot wide. On completion of the design, the sprite can be viewed back to front, upside down, stretched horizontally

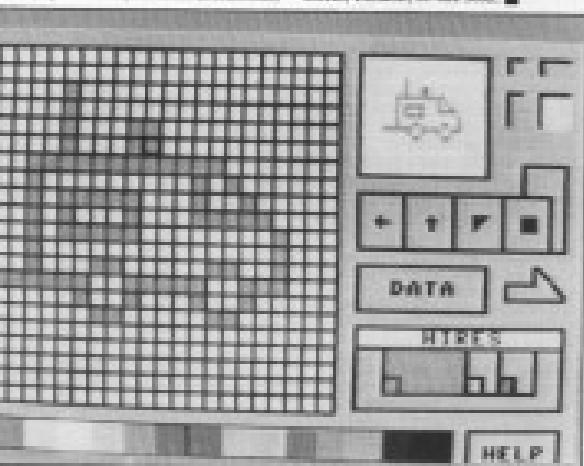
or vertically, or in Negative form. This reverses the foreground and background colours. You can, of course, clear the screen should you make a fool of yourself.

Once happy with your creation, prepare to the next screen for sprite selection and copying. At the top is a "Carousel" of 7 windows. Below is a Selector which allows you to scroll any of your 32 sprites into view, > at a time. Each of the sprites is assigned a position in the Priority Stack. This decides which will be in front of which if superimposed. The resulting overlay can be seen in the sprite Display Box. While at this stage you can copy or move any design.

Animation

Finally we arrive at the Animation Screen. This is when things really start to happen. There is a whilst strip running down one side... the "bit" running across it is a version of the "Carousel" from the previous screen. Sprites are transferred into the Carousel as and when required in order to make up an animated sequence of up to 256 frames.

When the film is run the final result of your labour will be revealed in all its mobile splendour. Once you are satisfied that the sequence is correct you can prepare your sprites for use within your own programs. To do this you need to convert them into basic data statements, using the CONVERT program so kindly supplied on the B side of the DEMO-DISKETTE tape. (Although it is claimed don't be put off by this Possessor, it takes under 3 minutes to become operational). All the screens have HELP boxes which refer you to a section in the manual. I especially like the use of icons; it makes it all so much easier — and faster! Everything works. Not a bug in sight. This is the sort of standard software packages should aim for. Excellent. Co-Sprite costs £39.95 from Microsoft, The Mirror Group, Hollins Circus, London, SE1 4LS (01) 580 2362. ■



Co-Sprite — not a bug in sight!

Solar Software evolved 18 months ago, with Bob Shay, who was then 10 years old, persuading his mother Bevola to buy him a Mac II.

John had long been interested in electronics, and had dabbled about with a microcontroller, so I decided to have him build the capability of purchasing a program. Amazingly, within 10 weeks of buying the computer Solaris' first three games were on the market: *Cataclysm*, *Scrambler* and *Space Invaders*.

By Christmas 1992 John had written three more programs, *Munch Man*, *Kaleidoscope* and *Cave Flight*.

By January '01 all six groups were editing well, and John was producing music

www., and Solar was receiving trade inquiries from computer dealers both in this country and abroad. The games were starting to appear on dealers' shelves—but only in the Manchester area. It wasn't until Solar took part in a computer exhibition at the Midland Hotel in Manchester, where they were approached by a distribution company, that the games were available from computer shops all over the country.

During this time John had produced another two games, *Cave Raiders* and *Comet Fire Blasts*, this bringing the total to eight games, all written in machine code.

By June 1980 the first 46 programs were in the pipeline — *Galactica*. This was followed by *Maniac Man* 46, which brought a huge response.

Sister now has her own duplicating equipment, run by Brenda's husband, with the

STANISLAV

BMX RACER



by John Blay from

The logo for Solar Software features the word "Solar" in a stylized, italicized font where the letters are interconnected. A small registered trademark symbol (®) is positioned above the letter "a". Below "Solar", the word "SOFTWARE" is written in a bold, sans-serif font.

Solar now has a total of 14 games for the Commodore machines, and they are programs are due at the end of September.

With new premises at 21 West Drive, Bury, Lancashire, Sister Barbara looks set for further success, and at 18 years John Shay is a director of a very successful concern.

Bolin's next 16 games for Nester is a multi-camera opus based on a Chinese legend. He says it will be the best yet, but while you're waiting for more from the NFL, here's some more from the Super Bowl.

The object of HSA & Slaney is to run along the course, jumping over and jumping over the flags of the red. The speed at which you are travelling affects the distance you jump, so it has to be judged carefully. You are allowed three attempts before the same hinder.

But am already on fail to make the jump
and you'll take a nasty fall! Use Z to slow down,
X to speed up, Y to jump.

Further reading

Full Prof on rotation

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16.180 Test fly jump and carry a can

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ANSWER

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10. The following table shows the number of hours worked by 1000 employees in a company.

2000-2001 Data for Science, Technology and
Mathematics

Page 10

17

```

299 POK(0)=POK(0)+"
300 POK(1)=POK(1)+"
301 POK(2)=POK(2)+"
302 POK(3)=POK(3)+"
304 REM---POKE=1H=SCNDRY-DTRH-
305 IF PEER(2)=0 THEN 371
307 POKE2,3
310 FOR R=0 TO LEN(MOD00)
312 CMSC(RID)(RKH),R,120
313 R=1
315 IF CX206 AND CX212 THEN D=6
316 IF C=195 THEN D=2
317 IF C=199 THEN D=4
318 IF C=200 THEN D=0
319 IF C=201 THEN D=6
320 IF C=64 THEN C=C-128
321 POKE 144400H+(25000H)+(C-1)+1024,R
322 POKE 144400H+(25000H)+(C-1),C
324 HEXTR,A!PRINT"(A) PRESS RETURN TO START"
325 GETRI 3PRMCDRBS(13) THEN 329
329 GOTO1
331 H=1024
332 FORR=0 TO #9:POKE16732+R,32:POKE16960+R,32:NEXTR
333 FORR=0 TO VR2 STEP 2
334 POKE16732+R,72:POKE16732+R,72:POKE16960+R,72
335 POKE16732+R,64:POKE16732+R,64:POKE16960+R,64:NEXT R
336 IFV=0 THEN POKE16960+R,32:POKE16960+R,32:POKE16960+R
337 FOR I=VR2+16 TO VR2+25 STEP 2
338 POKE16732+R,72:POKE16960+R,72
339 POKE16732+R,64:POKE16960+R,64:NEXTR
340 POKE3269,3:POKE3248,160:POKE3249,172:POKE2940,298
341 SYS19432
342 IF PEER(251)>C10 THEN R=PEEK(53279)
343 IF(PEEK(53279)AND1)=1 PROPEEK(251)>C119 THEN POKE2940,212:GOT0479
344 Z=2=1 IF Z>0 THEN 230
345 Z=4-[INT(Z/7)]-GOSUB 268
346 IF E=0 THEN POKE2940,F:E=1:GOT0238
347 IF E=1 THEN POKE2940,F+1,E=0
348 GETRI IF H=1 THEN 369
349 POKE3250,29046,
350 IFPEEK(197)>L278D K=1 THEN K=K-1
351 IFPEEK(197)>2349D K=22 THEN K=K+1
352 IFPEEK(251)>C150 THEN 369
353 IF PEER(251)>L29 THEN 230
354 IF PEER(251)>L80 THEN 259
355 IF RBB=77:RHSH=8 THEN H=1:I=0:J=0
356 IF GCH= THEN G=0:-1
357 IF G=4 THEN F=288:POKE2940,F
358 IF HC=1 THEN 297
359 IF D=0 THEN POKE3249,PEEK(53249)-3
360 IF I=1, THEN POKE3249,PEEK(53249)+3
361 J=J+1:IF J=4 THEN I=I+1:J=0
362 IF I=2, THEN H=0
363 IF PEER(251)>C115 THEN 319
364 GOT0 218
365 IFPEEK(251)>C115 ANDPEEK(251)>C118, THEN L=0:RH=0:F=218:POKE2940,218
366 IF L>K/2 THEN RH=L: L=0:RHPEEK(53279)
367 IF H=1 THEN 349
368 POKE3249,PEEK(53249)-3:L=L+1
369 GOT0 218
370 IF PEEK(53249)=172 THENF=299:POKE2940,F:L=0:H=1: GOT0369
371 IF(PEEK(53279)AND 1)=1, THEN 479
372 POKE3249,PEEK(53249)+3:L=L+1
373 GOT0218
374 REM
375 REM
376 REM

```

Continuation page 11

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```

388 IF PEEK(53279)+RND1)=1 THEN 400
389 D=1:GOT0450
390 F=212:POKE2048,F
391 REM
392 FORL=1 TO 56:NEXTL
393 SYS18794:GOT0500
394 REM---
395 POKE2048,212
396 IF PEEK(53249)+171 THEN 490
397 POKE33249,PEEK(53249)+12:FORL=1TO18:NEXTL:GOT0479
398 GOTD 499
399 IF D=0 THEN 550
400 PRINT"*****" * * * * * SC=SC+1
401 IF VNG THEN PRINT"*****":SC=PRINT"**":GOT0500
402 FORM=1TO1586:NEXTA
403 POKE329:SC=POKE329-LT:POKE839,V
404 CLR
405 SC=PEEK(829)+L1=PEEK(829):V=PEEK(829)
406 VV=V-1:PRINT"CP":POKE2048,298:F=298:GOT01
407 PRINT"*****":LT=1 ! ! ! SMASH UP ! ! !":IF D=0 THEN 600
408 FORM=1TO1586:NEXTA
409 POKE828:SC=POKE329-LT:POKE839,V
410 CLR
411 SC=PEEK(829)+L1=PEEK(829):V=PEEK(829)
412 LT=L-1
413 IF LT<0 THEN PRINT"CP":POKE2048,298:F=298:R=PEEK(53279):GOT01
414 PRINT"*****":LT
415 PRINT"*** DONE OVER. PRESS RETURN TO REPLY."
416 GETRI:IF R=CHR(13) THEN 390
417 F=298:POKE2048,F:R=PEEK(53279):POKE53269,R:POKE53249,172
418 POKE53249,R:POKE53249,B:RUN
419 FORM=1TO389:NEXTA
420 POKE828:SC=POKE329-LT:POKE839,V
421 CLR
422 SC=PEEK(829)+L1=PEEK(829):V=PEEK(829):RETURN
423 REM
424 POKE54276,0
425 POKE54276,12
426 POKE54276,12
427 POKE54276,12
428 POKE54276,129
429 POKE54276,58
430 POKE54276,128
431 RETURN
432 REM
433 POKE54276,32
434 POKE54276,32
435 POKE54276,32
436 RETURN
437 REM
1000 IF PEEK(20)=3 THEN 1
1005 PRINT"*****" :REM RINGER":POKE53269,0:POKE53281,0
1010 PRINT"**" BY J.P.SHAW"
1015 PRINT"*****" PLEASE WAIT A MINUTE."
1020 DOSUB 1500:GOTD01
1025 REM--POKE2--SH-DHTH
1030 KB=1+(344856)+3824
1035 KB1=(2,544896)+512
1040 KB2=(444896)*2048:D=0:C=0
1045 RESTORE
1050 IF 3=3 THEN 1000
1055 REM:R=IF R=1 THEN D=D+1:C=0:GOTD1555
1070 POKE KB,C:R
1080 C=C+1
1090 GOTD 1555
1100 POKE5334,PEEK(56334):RND254
1110 POKE1-PEEK(1):RND253
1120 FORM=0 TO 511:POKE(2,584996)+R,PEEK(R+53248):NEXTA
1130 POKE1-PEEK(1):RND

```

Continued on page 19



The WYSIWYG principle

Three business programs investigated by Trevor Doherty — a word processor and two spreadsheets. And WYSIWYG explained.

A WORD PROCESSOR is often one of the first "serious" pieces of software in which personal computer owners invest. The Commodore 64 is one of the best home computers for word processing, due to the excellent keyboard and readily available printers and disk drives. A large number of 1984 disk driver writers were forthcoming enough to get a free copy of Commodore's own *Keyboard word processor* with their cassette — which no doubt in turn sold a lot of Commodore machines.

Because so many people already have
bought a software house selling a rival
word processor must have an uphill
struggle, with a large chunk of the market
inclined to buy their product, however
good.

Markus Wenz

Any word processor must have certain fundamental features. The most basic allow that to be typed in from the keyboard, viewed on the screen, edited and amended as required, printed out and then stored for later retrieval. The ability to perform these four additional functions that most of the better processors allow, makes that even a two-fingered typist can produce a perfect printed document.

Wordstar II (\$49.95, disk) is the latest revision of a word processor with a long pedigree on Commodore machines. The program comes with a "floppy" protection device which plugs in to joystick port two. There is a 60-page manual and a little card which lists most of the II's function keys and

shown their way — an idea which shows the essential thought which has gone into the

On loading the program you are confronted with a blank multi-coloured screen (fortunately I quickly learned to change the colours to something more sensible). Woodcraft works on the **WHAT YOU SEE IS WHAT YOU GET** principle — What You See Is What You Get.

Windspooners fall into two categories, those which format on output to the printer and those which format as you type. Windfall falls into the latter category. You type all the screen text that may ever repeat in its appearance in the printed output. You afraid that? I've not mentioned that this method is usually successful in the 40-column screens available on the 48 - the screen needs always to allow a typical 80 column down-line to be input and you have to scroll right side to side to read the finished document on the screen. One advantage of this method in the text isn't littered with embedded form commands.

WordNet uses a "Merger", a collection of rules across the network on which you set up merges and tabs. This feature is very easy to use. Other features include search and replace — for example, you can use the processor to find every occurrence of the word "bank" and replace it with "tree". The ability to take text from one document and combine it with another is provided through the "merge" feature, and a "fill like" feature makes it easier to be inserted into standard texts. (This comes from

Within the process is very easy, and text files can be located by calling up the directory and using the cursor to highlight the correct file to be located — no need to remember the exact name.

The ability to output new or a wide range of printers is one of Bindery's strongest features. Each printer supported has a printer definition file on the disk, covering a good range of the most popular printers. Macintosh and PC versions work fine. The clever thing is that if you have an unusual printer you can define your own printer definition file and save it on the disk; nearly half the manual is devoted to this useful feature.

Conditioned? A product of the highest standard, particularly strong on price support, good value for money. But I'm afraid I couldn't get on with the interview travelling on the current 16 document reader than 40 columns.

1 - 100

A *spreadsheet* is another piece of software likely to be high on the list of non-game software purchases. A spreadsheet allows the computer screen to be used as a large sheet of paper divided into rows and columns, by formating the screen into a series of "cells". Unformatted AI, BT and similar like plastic (see chapter 1).

Normally any task that can be done with a calculator and pencil can be carried out and subsequently used for future use or printed. Once a sheet of calculations has been set up, it is then easy to amend individual figures and see the effect on the other dependent figures. Thus if you had a sheet where your household budget plan could show the effect of, say, a higher mortgage repayment on your finances, this feature is called "what if" calculation.

One feature which makes spreadsheets like it "replicable": the ability to copy a cell or range of cells so that similar calculations can be carried out elsewhere on the sheet. This allows, for example, similar modelling to be carried out in each of twelve monthly columns by just defining the calculations in the first month and then replicating it. I use a spreadsheet in home to carry out many tasks, such as keeping track of my family expenses.

however, 14 (179.51 disk, 14.73 tape) is now, or near, the market. It is termed as "100% machine code" which could give it a speed advantage over programs which are part or all written in Basic. However, I found the speed advantage was slight and negated by other disadvantages.

100



• Strengths of "A picture of the human condition"

thing applies with "d" for data and "f" for formula. This comes in as a hidden arrangement, and I found the extra three keystrokes per cell slowed down use. Other spreadsheets are able to distinguish between labels, data and formula input by the initial key-strokes.

Unlocked

Autocalc also temporarily blanks the screen during each calculation, a limitation other applications avoid. Calculation can be re-requested by using the command **V**, or automatic calculation can be selected, but this strangely takes place when you perform a subtraction operation, not immediately following entry of the number in question.

Two features I did like very much were the ability to change the width of individual columns, and the "home" key which takes you back to call All from anywhere on the sheet. No facilities are offered to insert new columns (new, delete them or move them). It is possible, however, to delete the contents of an individual cell. A limited replicate function is available, allowing single cells, rows, columns or blocks of cells to be copied, but not expanded. Thus you cannot easily carry out similar calculations in each of several columns without entering them all individually.

had time plus type something in and press "return" the cursor jumps in a direction dictated by its previous movement, unusual and annoying. Much more serious was that I managed to "crash" the program twice. The first was caused by the "command line" at the bottom of the screen not being prioritized. I inadvertently used the cursor key and typed in the wrong place on the screen. When I pressed "return" the program crashed. The second occasion was when I incorrectly tried to save a file to tape instead of disk.

To sum up, I'm afraid I cannot recommend this product, despite the competitive price. There are better spreadsheets for the money, for instance SuperSoft's *Business*.

PP (1999-2000) is a spin-off from a previous one.

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available for the 64 is a facility which lets you add functions by programming your own, in Basic, saving them as click and recalling them from within the spreadsheet. This powerful facility means that the spreadsheet can be customized to carry out specialised calculations beyond the ability of a normal spreadsheet.

PS is based on Practical and offers the same facilities, with the addition of the programmable function. PS comes with a 122-page manual divided equally between the standard Practical features and the additional PS features.

Page 1

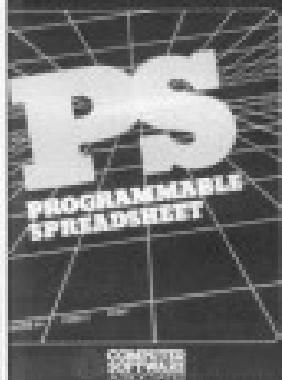
After loading PB you select your sheet size, up to a maximum of 2000 cells. Then you choose the column width, and one column may be a different width from the rest, to allow long titles. Labels, data and formulae may be typed straight in, and PCs can usually decide which are which. One objection is that the screen display is just upper case. Calculation is performed and requested only by pressing 'U'. Replacement is done using the DEL key, but only after a

single target cell to be used at a time, although this may be expanded into a range of target cells. Insert, delete and move facilities are all provided.

PS has some unusual facilities which are not often seen in old spreadsheets. You can change the representation of numbers to graphical formats, and use PS-rem to plot bar graphs which look very good printed or on the screen. PS allows you to sort both alphabetically and numerically and to search for a number, word or formula. This can be useful so that they do not spill off when moving round the screen. All the above features are shared with Practical

The unique P1 programmable facility is covered in the second part of the manual; twelve additional facilities are described and included on the disk to get you started. Examples include a facility to carry out a test on primary and secondary media and a feature to retain all the data from your tests while leaving the tapes intact. Program listings are given in the manual to give you an idea how P1 does things. The possibilities are limitless. To use the programmable facility you first recall your program from disk and then execute it as often as you like at the relevant places on your operations. Only one add-on module may be used at a time, but several could be called, one after another, from within the same procedure.

I think P2 is an excellent product, but the market for it is limited to those who need more than a good ordinary spreadsheet can provide. If you don't need the add-ons, Practical, which is about 120 cheaper would serve a need best. ■



基础数学与物理 = 2001/2

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BY JEFFREY L. BROWN

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COMMODORE SOFTWARE FILE

SPLIT SCREEN

By Michael A. Sappelhoff from his old program

THIS IS A BASIC loader program which

```

10 R=50039 T=0 C=0
20 READ I:IF I=1 THEN GOSUB 40
25 POKER,D:T=T+D:POKEI+1:C=C+1
30 GOTO 20
40 IF T<16789 THEN PRINT CHR$(147):PRINT "BOTH VALUE ERROR":END
42 IF R<50446 THEN PRINT CHR$(147):PRINT "NUMBER OF DATA ITEMS ERROR":END
50 PRINT CHR$(147):PRINT " USE BYS(50039) TO CALL HIRES WINDOW"
52 PRINT CHR$(17):PRINT " SYS(50446) TURNS OFF HIRESH"
54 PRINT CHR$(17):CHR$(17):CHR$(18):" TO CHANGE AREA OF HIRES WINDOW"
56 PRINT CHR$(17):" USE POKE50439,Y FOR START OF WINDOW"
58 PRINT CHR$(17):" POKE50419,Y1 FOR END OF WINDOW"
60 PRINT CHR$(17):" HIRES WINDOW RT $192 TO 16191 IN FBIN"
62 PRINT CHR$(17):" USE NORMAL COLOR HIRES AREA ROUTINE"
67 PRINT CHR$(17):" IE. POKE$192 TO 16191:POKE,X,NEXT"
70 PRINT CHR$(17):" ADJUST COLOUR MEM FROM 1624 TO 2023 TO"
72 PRINT CHR$(17):" SUIT AREA RESERVED FOR HIRES WINDOW"
80 END
100 DATA 20,169,197,141,20,3,169,196,141
101 DATA 21,3,173,17,208,41,127,141,17
102 DATA 208,169,151,141,18,208,173,25
103 DATA 206,9,1,141,26,208,88,96,169,1
104 DATA 44,25,208,208,3,76,49,234,173
105 DATA 17,208,201,27,248,3,76,249,196
106 DATA 0,173,17,208,9,32,141,17,208,173
107 DATA 204,208,9,1,141,24,208,169,151,141
108 DATA 16,208,169,1,141,25,208,194
109 DATA 68,184,173,184,64,173,17,208,41
110 DATA 223,141,17,208,169,21,141,24,209
111 DATA 169,0,141,18,208,76,238,196
112 DATA 20,169,49,141,20,3,169,234,141
113 DATA 21,3,173,17,208,41,223,141,17
114 DATA 208,173,24,208,41,247,141,24
115 DATA 208,173,26,208,41,254,141,26,208
116 DATA 96,-1

```

Ski slope

This game for the unexpanded VIC 20 comes from Paul Murphy of Worcester

The object of Ski-Slope is to avoid the trees for as long as possible while collecting hearts and diamonds. If you take a jump, you get extra points, but to do this you must be going at least at medium speed. You get a bonus life after 3000 points, and

the game changes after three bonus. Use the cursor keys to move left and right, and control your speed with X for slow, Z for medium and C for top speed. Break a leg!

```

5 PRINT"SKY SKI-SLOPE" 10 BY NIBALL
10 PRINT"USE CURSOR KEYS FOR MOVERENT LEFT AND RIGHT."
15 PRINT"X=LOW SPEED,Z=MEDIUM SPEED,C=TOP SPEED."
20 PRINT" "
25 PRINT" "

```

Continued on page 40

```

32 PRINT "PRESS A KEY."
33 GET [I] IF I=0 THEN 30
34 SC=0 DM=0 HT=0 JP=0 LJ=0 T[!]=$"000000":LJ=1 LK=1:POKE 657, 129
35 L=7918 D=29
36 POKE 36878, 6:POKE 36877, 129
39 PRINT "2"
70 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
75 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
90 DOSUB 1000
95 IF PEEK(L)=89 THEN 399
96 IF PEEK(L)=90 THEN SC=SC+16:S=1:DM=DM+1:IF S=5 THEN SC=SC+16
97 IF PEEK(L)=93 THEN SC=SC+20:S=1:HT=HT+1:IF S=5 THEN SC=SC+20
98 IF PEEK(L)=182 THEN GOTO 2599
100 POKE L,8:POKE L+36728, 0:POKE L2,32
102 IF S=1 THEN S=0:DOSUB 3199
105 L=L-22
110 FOR PR=1 TO 9 :P=PEEK(137):NEXT
120 IF P=31 THEN L=L-1:GOTO 140
130 IF P=23 THEN L=L+1:GOTO 140
132 IF P=33 THEN S=18
133 IF P=26 THEN S=15
134 IF P=34 THEN S=1
139 IF RND(1)<.95 THEN DOSUB 2599
140 JFL=7908:THEM=7901
150 JFL=7921:THEM=7920
160 SC=SC+1:IF SC>11 THEN SC=SC+1
170 IF S=1 THEN SC=SC+1
174 IF LK=1 AND VAL(T[!])>400 THEN SC=SC+500:LK=0
176 IF LJ=1 AND SC>3000 THEN LJ=0 LJ=L1+1
180 GOTO 26
399 POKE L1,42:POKE L2,42
405 POKE 36877, 0
310 FOR PR=1 TO 659:NEXT
320 LJ=L1-1 IF LK<=8 THEN 400
330 GOTO 30
429 PRINT " SCORE=";SC
431 PRINT "S =";S
432 PRINT "H =";HT
433 PRINT "D =";JP
434 PRINT "HTIME=";T[!]
418 IF SC>HC THEN HC=SC:PRINT " NEW HIGH SCORE!!":GOTO 440
420 PRINT "HI =";HC
440 FOR PR=1 TO 1000:NEXT
450 PRINT "PRESS SPACE TO PLRV"
455 R=PEEK(137):IF R>32 THEN GOTO 460
470 GOTO 40
499 END
1000 X=INT(RND(1)*287)+1
1002 IF RND(1)<.9 THEN H=INT(RND(1)*16)+1:PRINT TAB(X);":":GOTO 1020
1005 IF RND(1)<.1 THEN PRINT TAB(X);":":GOTO 1020
1008 IF VAL(T[!])>388 THEN PRINT TAB(X);":":GOTO 1020
1012 IF VAL(T[!])<=388 THEN PRINT TAB(X);":":"
1020 L1=RIGHT(STR(L),1):PRINT "#SCORE";SC;"TIME";RIGHT(T[!],3);H":L1+
1030 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
1040 RETURN
1499 REM RAMP
2568 RD=DINT(RND(1)*20)+1
2569 RD=RD+8876
2588 FOR CL=RDTOD+110 STEP 22:POKE CL+36728, 0:NEXT
2510 POKE RD, 162:POKE RD+22, 88:POKE RD+44, 89:POKE RD+66, 89:POKE RD+88, 89
2530 RETURN
2599 REM NOISE

```

```

3100 POKE36878.15
3105 POKE 36877, 9
3110 POKE 36876, 220
3120 FOR M=1TO5:NEXT
3130 POKE 36876, 9:POKE 36877, 128:POKE36878, 6
3140 RETURN
3499 REM JUMP
3560 IF Q=15 THEN 180
3510 IF Q=1THEN BR=5
3520 IF Q=18 THEN BR=4
3530 POKE L=22, 32
3540 GOSUB 1899:POKE L, 8:POKE L=22, 32
3550 FOR PA=1TO9:NEXT
3560 FOR QM=1TO8:
3569 GOSUB 1899
3570 FOR PA=1TO9:Q:NEXT
3580 POKE L, 8:IF QM=1THEN POKE L=44, 182
3590 POKE L=22, 32
3600 NEXT
3610 IF PEEK(L)=22=88THEN 390
3615 SC=SC+59
3617 IF Q=1THEN SC=SC+59
3619 JP=JP+1
3620 GOTO 100

```

Bongo Maniac

These short programs from Alan Gorst and Stephen Ward - of

More Noise

THREE short sound and graphics routines could be incorporated into your own programs.

The first is Computer Music, which is the sound of a computer going mad!

The second is Sound and Colour, which gives a synchronised sound and colour effect.

The last is Bongo Drums, which represents the sound of someone beating with the bongos.

```

2 PRINT"*****"
3 PRINT"MM MM MM IN COMPUTER MMHPC"
4 PRINT"-----"
5 PRINT"*****"
10 POKE36878, 15
20 C=INT(RND(1)*459)+175
30 S=INT(RND(1)*255)+1
40 POKE36879, C
50 POKE36875, S
60 FORT=1TO100:NEXTT
70 GOTO20
80 SC=36878
90 ST=36877
100 SC=36876
110 SC=36875
120 SC=36874
130 POKESS, 15
140 POKESS, 123
150 POKESS, 255
160 POKESS, 0:FORT=1TO58:NEXTT:POKESS, 15
170 POKESS, 155
180 POKESS, 0:FORT=1TO58:NEXTT
190 RESTORE:GOTOB0
2 PRINT"*****"
3 PRINT"SS SOUND A COLOUR"
4 PRINT"-----"
5 PRINT"*****"
10 POKE36878, 15
20 S=INT(RND(1)*55)+175
30 C=INT(RND(1)*55)+1
40 POKE36879, C
50 POKE36875, S
60 FORT=1TO100:NEXTT
70 GOTO20

```

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Street Bomber

STYLUS ROMANCE is a version of **WALL-TO-WALL**.

2018 RELEASE UNDER E.O. 14176 AS A COPY OF THIS WORK IS NO LONGER AVAILABLE

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which your aerospace is running out of fuel and you have to bomb the buildings below you to return in order to make a safe landing.

Program notes

Lines 3-6: active characters
 Lines 69-111: set up novel
 Lines 111-119: control movement
 Lines 120-180: road traps
 Lines 2000-2009: used *elbow*
 Variable: A = place position, P = body position, RMHIG = handle left.

```

1 INPUT"LEVEL 1-ERGY 2-HARD 3-IMPOSSIBLE";R#
2 IF#R="1"THENBOMB=500
3 IF#R="2"THENBOMB=300
4 PRINT"PLEASE WAIT";IF#R="3"THENBOMB=200
5 POKE56034,PEEK(56034)AND254:POKE1,PEEK(1)AND251:FORJ=8TO283P:
POKE12289+J,PEEK(53248+J)
6 NEXT:POKE1,PEEK(1)OR4:POKE56234,PEEK(56234)OR1:FORU=12288T012295:
RENDU:POKE6,J:NEXT
7 FORK53272,25
8 FORT=1TO360:NEXT:POKE54272,17
100 PRINT" "
101 PRINT" "
102 PRINT" "
103 PRINT" "
104 PRINT" "
105 PRINT" "
106 PRINT" "
107 PRINT" "
108 PRINT" "
109 PRINT" "
110 PRINT" "
111 PRINT" "
112 PRINT" "
113 PRINT" "
114 FORR=1TO4T02823:POKEA=0:POKEA+54272,L:POKEA-1,32
115 IFPEEK(R+1)=32THEH0000
116 GETRA:IF#C="P"THENH118
117 IF#R030THEH000T0120
118 PRINT" "THEH32080H:DPA=2032THEH3880
119 HEXTA
120 BOMB=30HB-1:POKER=0:FORP=R+40T0A+1000STEP48:IFP>1984THEH00T0156
121 POKEP+54272,1:POKEP,81:POKEP-40,32:POKEA,0
122 IFPEEK(P+40)=32THEH00KEP+40,32:GOSUB1989:GOT0158
123 HEXTB
124 FORP=40,32:POKEP,32:GOT0118
125 FORP,42:POKE54276,15
126 FORI=9T090:POKE54277,9:POKE54276,129
127 FORG=1T0199:HEXTG:POKE54273,6:POKE54272,205
128 FORK54276,8:NEXTI:RETURN
129 FORA,42:POKE54276,15
130 FORI=9T090:POKE54277,15:POKE54276,129
131 FORG=1T02090:HEXTG:POKE54273,6:POKE54272,205
132 FORK54276,8:NEXTI:PRINT"DUHLUCKY":T=1:FORD=1T01600:NEXT
133 BOMB=400:GOT07
134 FORG=1T0108:POKE54277,15:POKE54276,33:FORI=39T01995STEP2:
POKE54273,1:NEXTI
135 FORK54276,8:NEXTI:PRINT"DUHELL ZONE":FORG=1T01600:NEXT:GOT07
136 GOTO42

```

Based on your **Customer personas**, marketing is discrete — and is oriented on their right time & possible needs.

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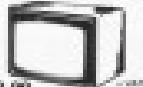
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DISK SPECIAL

A collection of features on disk software and hardware including an easy-to-enter book contest — in the first section.

Slipping a disk too many

Pete Gerrard looks at Hoppy games, and on the whole is pretty much disk-gusted

When a program has had a fair amount of pre-release hype projected around it, it comes as something of a relief when the programme concerned actually lives up to expectations. Such was the case with *Commodore's International Software*.

However, when the program does not perform as the press releases, hand-outs and pre-release publicity would have us believe, then the disappointment with the program is that much larger. After all, *International* fails regrettably here this latter category.

Written by the same programmers as *Adventure's* earlier success *Maze Mania*, this disk and joystick oriented game does have quite a good opening scene, albeit very poorly spelled around the screen. The game starts when an indicated Alice jumps down a rabbit warren and falls down and down and down. You have to move her around and collect blankets, keys, food and drink, whilst avoiding bumping into lamps and pictures. When Alice lands, you then have to use the keys collected earlier to move through a variety of doors of different sizes (which is where the logic and disks come in), or make your character grow and shrink in size, to find rooms which look like... to say the least.

Alice in Wonderland

Being hit by a flying chick signals the end of this part of the game, and you are presented with a few lines of text from the Alice in Wonderland book while waiting for the next part of the program to load.

This time you're not in the garden, with a cheshire cat prancing smugly at you while a pipe-smoking caterpillar blows deadly stink rings everywhere. Alice has to jump around and collect bread-and-butter flies and smoking butterflies (which 100% immediately turn escape balls in part four of the game), avoiding the aforementioned stink rings and seeds which those particularly violent flowers keep spraying over everyone.

The third part of the program I found to be the most tedious of them all. The action has now moved on to a chess board, featuring Alice and two white knights on one side, and Twiddlebottom and Twiddlebottom

(with a little help from the Twiddlewicks) on the other. Alice has to get from one side of the board to the other, using the knights to temporarily restrain her opponents. Her speed of movement is usually like no one else's, and once you've put a knight on the Queen's Root, 7 squares appear impossible to move it again, a feature, perhaps?

The final part of the game is a ridiculous game of croquet, complete with Rumbung as master. But no hedgehogs or croquet balls.

Two levels of skill are offered to you at the start of the game, although there doesn't appear to be much difference between any of them that I could detect. Not a game I can imagine spending so very often; nice graphics, shame about the game.

Regalos readers of this illustrious magazine will recall a review a few months ago of a game called *Forbidden Forest*, written by one Paul Norman, and released over here by *Adventure*. The review was going favourably, although the hope was expressed that there might be some better software on the way shortly.

Well, *Caveats of Khalka* is the next offering from young Norman, and if the standard of this game is anything to go by, he's a mighty fine programmer who is improving all the time. This is essentially an adventure game, but with one major difference from most of them. Not only

does it rely entirely on the art of graphics, but also you only control over the player via a joystick rather than the keyboard.

You have a number of cameras to explore, and these are depicted on the screen in a glorious 3 dimensional display, which scrolls in all directions as you move your joystick around the plane. He can throw and climb ropes (which produces some hideously graphical displays at times), crawl along on his stomach, jump all over the place, and also shoot any of the many nasties that come at him. Falls of a great distance are to be avoided, as is bumping your head on a rock above you. Five lives are awarded in all, and you're reminded of any lives lost by a number of notifications at the top of the screen.

Twister

This is not an easy game to play, and the beginner will do well to practise moving about at the top of the screen before plunging in and taking on the game itself. In one place, where the going gets rather tricky, there is an oscillator to help you out. Also, and this is a criticism of all games that rely on the joystick to perform a number of different tasks, it is all to easy to try and move the oscillator and end up placing it on the door of a castle.

That aside, this is a very worthy follow-up to *Forbidden Forest*, and if enough games enthusiasts have got disk drives, it should do very well indeed.

Another from *Adventure*, *Frostbite* is aptly named. I guarantee that anyone who buys a copy of this game will be driven frantic by the musical background that accompanies it.

If this game was played in total silence, it would be a reasonable (but not a great piece of software). However, each of the six screens has a (supposedly) different piece of music being played while you're on that screen, and the quality of the music is quite superb. Some of the tracks being played are a little obscure (*Maliblissous* by Paul Simon surely won't be known by too many people), but their rendering is simply wonderful.

Even on the initial display, before you start playing the game, there's a spinned rendition of *Crazy Little Thing Called Love*, the Queen number.

Still, the game itself, Frostbite, is a



Alice in Wonderland — graphics good, game poor?

telephone engineer, one day happens to stumble across a magical telephone network. Pots of gold sit around all over the place, and you have to get them all. However, these pots of gold are guarded by various creatures, and one touch is足以 kill them slowly. Life is made a little more complicated by the fact that you can't go through telephone poles, and have to climb up and around them, whereas the phone can punch neatly through.

Interlock

Apart from the music, nothing much changes from level to level. It does get a bit harder, but not by much. An interrupted interval is optional between some of the levels, which it's worth playing to go to see. On the first interlock, we see our hero being chased and finally caught by a massive frog, but on the second one Freddie has his revenge, and after being chased off one side of the screen by the frog he reappears driving a massive tank and blasting the frog to smithereens.

So, for all those who like trying to make that time in one, a game to keep an eye out and enjoy for.

One company who've gone into disk-based games in a big way is Microdel in Cornwall, and the rest of the disk games looked at the month belong to them. Microdel, as we all should know, made their name by producing a lot of good Dragon software. Unfortunately, with only a couple of exceptions, they don't seem to have got the hang of the 3D yet.

Grabber is an unusual variation on the maze theme, with two mazes instead of one. Eight treasures are divided up between the mazes, and it is your job to go around and collect all of them. However, the mazes are guarded by what Microdel refer to as Ghouls, and they have a habit not only of bumping into you and killing you, but also of snatching off with your treasures after you've safely snatched it away.

You swap around from maze to maze by pressing the fire button, which is a convenient way of getting out of the way of a particularly nasty goul. On some of the later levels the only possible way of completing the game is by continuously swapping around. This is because in one maze you're represented by a conventional looking character, who can't walk through



Grabber — a disk-based puzzle

walls, while the character in the other maze is simply a square box which has the magical ability to break walls aside as though they were matchsticks. Then by jumping from one character to another you can get your way out of some pretty sticky situations indeed.

Swish!

Some pretty crude graphics are used throughout the game; I expect to lose a life to something a bit more dramatic than just exploding a square in both directions. Also the sound, as with a lot of Microdel games in fact, is hideously bordering on the cacophony, and although I don't particularly like playing games in silence this is one occasion when I happily flick off the radio and played on in blessed peace and quiet.

An unfortunate start from a company whose reputation promises better than this.

Now we see a full page advertisement for a game, and you immediately begin to think that perhaps that game is going to be the star special. *Assault 2000* does not live up to its advertising, and indeed it was quite hard to remember what the game was about without referring to my notes when it came to writing the review, but the sign of a good game.

It is one of those offerings where you run off in the middle of the screen, and have to shoot the variety of aliens who march relentlessly towards you all the time. In common with most Microdel disk games these are absolutely no instructions supplied either with the disk or on the cover, so a couple of lives will be lost while

you try and figure out which port the joystick ought to go in. Port 2 is the answer, if you happen to buy a copy. Another peculiarity about this game is that it started the cassette version going when it finished loading. What is odd? It's totally unnecessary, and one can only assume that the program isn't yet totally at home with the lot.

Nothing in particular changes from level to level. More aliens appear in the time honoured tradition, but nothing else seems to happen. A game that it, and everyone else here at the mighty Grendel games centre, became very quickly tired with.

Most of you will probably be familiar with the game of *Prague*, as *Bengie* as it is sometimes called, but for the benefit of the Tibetan Monkies amongst us, here goes with a summary of *Prague*.

Scenes

The game takes place in the frantic waters of the Arctic, where you, a cheerful little penguin, suddenly find yourself being attacked by hordes of ferocious seals. In order to get rid of the raccoons you have to pack blocks of ice around, and hopefully put the buggers against the sides of the screen by doing so. Points are scored for every sealie killed, and in this Microdel version of the game you also get points for every block of ice moved, regardless of whether or not it succeeds in getting rid of one of the enemies.

The original game I liked, and can remember spending many a fun power play in a vain bid to get my name on the highest score list. This, however, is not a worthy version of that original program.

Not a game that went down well here, and may our games team never meet up groups I can't really see this doing very well.

The remaining Microdel games are definitely in a class above the previous ones, and *Bengie* Bengie had me playing it for a long, long time.

You control a little man whose job it is to collect ten keys from the Chamber of Puddles. The Chamber of Puddles is in fact little more than a collection of yellow planks across the screen, with a handy transporter at the bottom to take you back up to the top should you step on it. Five planks in all, with two keys per plank, each one is guarded by something or other. Microdel refers to them as floating arms,



Grabber — slow? yet simple by the gods...

radiactive bats, and raving eyes.

Your little man has the ability to move left or right, jump or dash, and fly at any of the hazards that confront him. If you manage to collect all ten keys you are then taken onto the next level, which is very difficult to get through. You have to run along a series of blocks, watching out for drops of acid and the four demons that guard this level. Unfortunately, the drops of acid appear at random, and since you start off at the top of the screen and they move very swiftly downwards, you can guarantee on losing at least one life on this level.

Spaced out

If you manage to complete this it's back to the first stage again, but with more enemies out to get you. An interesting and entertaining game; nothing special in the way of graphics or sound, but a fine idea and one that has been nicely implemented.

This Cauldron chapter seems to get everywhere, and now we find him deep in Cauldron in Space, a game that bears more than a passing resemblance to *Jaguar* from Ultimax.

Cauldron has been sent on a mission of plunder in the heart of the Mysterious solar

DANGER CAULDRON

Dangerous space travel has never been so much fun! In the depths of the galaxy, the mysterious Cauldron is on a mission of plunder. He must collect ten keys to open the final door to the treasure trove. But he must also avoid the many dangers that threaten his survival.

Collect the keys and you'll be given a chance to play the final level again.

Danger Range — collecting keys and avoiding acid

DANGER CAULDRON



system. On landing on each planet, you have to refuel Cauldron's ship by flying around in your jet-propelled way to a number of fuel dumps conveniently placed on the screen. To make life more interesting, you can only carry one fuel 'pod' at a time, and the longer you take to collect them all, the more meteors come flying across the screen at you. You can shoot them down, but by the time you're on the last couple of pods there's so many of

them that you're almost bound to lose at least one life.

Challenge

After acquiring enough fuel, you have to either strand and collect as much treasure as you can before you're forced to take off and land on another planet. To escape the notion of having every level looking remarkably the same, occasionally you will get an upgrade function and have to send a piloted shuttle on certain quests from some space station coordinates given on the screen. Meanwhile, the evil Minotaurs have planted a bomb on your spaceship, so this should be also involved in a race against time, to get back and take-off before the bomb explodes.

This is quite a challenge, Bill, I usually managed to survive.

After that it's back to the main game again, and more lands down, no cameras, mindless alien blasting. Good fun, even if it isn't particularly original.

As an overall conclusion, the standard of disk based software isn't yet up to the higher quality arcade games, and once again we can only sit back and wait for the better software that is sure to come from somewhere. ■

Monsters in Space

The Polished Child has developed the Cauldron to begin on a mission of plunder against the Mysterious Solar System. Cauldron has the option of several planets that he can visit, by shooting pods from the Mysterious Solar System. After taking on the Polished Child, the player can then visit the Polished Child's home planet, where he will get a chance to play the final level again, before the planet is destroyed and taken over by the Cauldron.

Cauldron in Space — plundering the Mysterious Solar System



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If you can't tell the

difference between sequential, relative and random access files, this is the book for you! Normally £19.99 in the shops, but the lucky winner will receive free postage from Sunbeam. Simply answer the ten questions and complete the competition, then send your entry to *Commodore Horizons Disk Competition*, 12/18 Castle Newport Street, London WC2, with your name and address, to arrive no later than the last working day of October. Personal computers rules apply.

1) What is the name of the process used for dividing a disk into "tracks"?

2) What is the meaning of the abbreviation RAM?

3) What is the microprocessor found in the 1541 disk drive?

4) How many bytes can be stored in one sector of a 1541 disk?

5) How many tracks are there on a formatted disk?

6) Is it dangerous to remove a disk while the LED light or the GREEN light is lit?

7) What is the earliest name of Commodore's new "fat" disk drive?

8) And what is the name of the 1541's immediate replacement?

9) What is the 1541's normal device number?

10) Which is not a disk command: SCRATCH, VALIDATE, RENAME, NUMERATE, COPY?

Ultimaker complete in 12 words or less — "You should never slip a disk..."

Delving into disk drives

*A further adaptation from the Commodore 64 Disk Companion
by David Lawrence and Mark England*

THIS FIRST use that anyone makes of a disk is to store programs. There is no doubt that, if you enjoy computing and use your 64 more than occasionally, the difference in speed with which you can access programs makes the cost of a disk drive worthwhile compared to a cassette recorder.

At the same time, it is always surprising how little care most people take in the keeping of programs that they have spent long periods developing. Failing to save regular updates when a program is being developed, failing to check that a program has been properly saved, keeping only one copy of important programs and abusing disks by losing them prevent exposure of the elements. Given below are some at least common sense rules when it comes to saving programs.

As you develop new programs, **SAVE** them regularly. Like any other micro-computer, the 64 can lose programs if there is a momentary spike in the electricity supply, or if someone takes the plug, or more bizarrely if your programming goes狂妄 to open the 64's equanimity. How much work you will have lost will depend on how long it has been since you last saved your program. If a program is being entered rapidly, you should not normally expect to enter lines for more than 15 minutes without losing the program. When a program is being debugged, so that relatively frequent changes are being made, perhaps you might increase that period to half-an-hour. It really depends on how much you are prepared to lose, but you can depend on the fact that if you do not save programs regularly you will sooner or later lose an important program that has taken a long time to enter.

SAVING

In order to embark on a policy of **SAVE**-ing programs regularly, you need first to know the command which will store a program on the disk drive. If you have previously been working with a Datasette cassette recorder, then you will have become used to the format:

SAVE "<PROGRAM NAME>"

to **SAVE** a program on;

LOAD "<PROGRAM NAME>"

when **LOADing** a program back into memory.

With your disk drive installed, the situation changes slightly. While the 64 can work perfectly well with the 1541, it is designed on

know which of them is being addressed at any one time.

Devices

To overcome this, 1541 drives are built with the ability to change their device numbers so that a command can, for example, be issued in the form:

SAVE "<PROGRAM>" 1

to access one of the drives, leaving device eight completely untouched. There are two ways in which disk drive device numbers can be changed, in hardware and in software, that is to say you can either make a modification to the equipment itself or you can use a program to make a temporary change. Of the two, if you are going to be permanently using more than one drive, the hardware solution is by far the best. It basically involves making a small cut in a single track of the printed circuit board inside the drive. Details of this are given in the 1541 manual but they are not very clear and, frankly, we would recommend that when you purchase your second 1541 you do so on the understanding that the dealer will do the necessary work involved. In your dealer books is the idea that perhaps you might consider finding one who knows what he is doing.

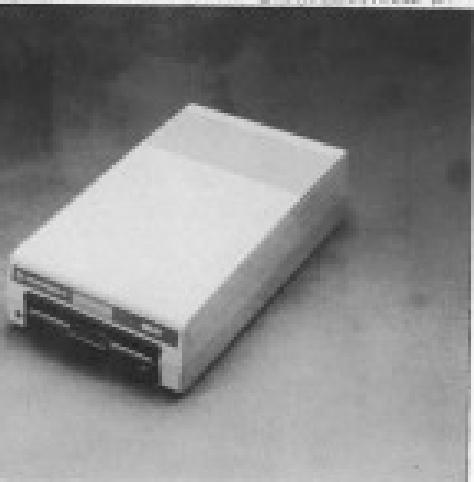
Programs

To change the device number of a disk drive with a program is not difficult (see Chapter 12), but it can become tiresome, since it has to be done every time the drive is switched on. Even so, if you are mainly borrowing a friend's drive for the day, the software solution is a better one than rigging the drive to planes.

To make saving a program easier and to encourage yourself to do it, it is a good idea to build a program saving facility into each program you develop, along the following lines:

1. **QUIT** ;

2. **SAVE "<PROGRAM NAME>" 1**



• 第四章 計算機的運算能力

100

100

Including such a routine in a program has the virtue that you are unlikely to write the program under the wrong name due to a spelling error. It can be used simply by entering QUIT(2) as an added bonus, in case that all your programs can be started with a uniform QUIT(1). If you do not wish to use RUN and write out any stored variables

The features of this reading need some explanation, the command VILKITY and the modifier 'gjör' at the beginning of the sentence.

One of the main reasons for building the VBL routine into the program as shown is that it can then be combined with VBLIBY. The purpose of VBLIBY is to check that a program stored on a specified device is the same at every request; the program is initially in memory, or that a program has been correctly VBLIBYed. The format of VBLIBY is:

There PROGRAM NAME is the name of a program stored on the device. Note that it is important that the name of the program on the disk is the same as the name that you have allocated to the program in memory. The name of the program is stored on the disk's directory but not with the program itself, and no name is stored in the memory of the 80 for the current program. All you are doing is giving the disk the information to load a particular file.

10

Unlike the cassette recorder, the disk drive requires no work from the user when RIBBY is employed. In the last SAVE operation in the previous section, the drive will automatically search out the program which has been SAVED without the user intervening.

100

— 1 —

- Type of file in use

 - 0 = Unchecked or DEFerred file
 - 1 = Unchecked SEQential file
 - 2 = Unchecked FileCom file
 - 3 = Unchecked USell file
 - 4 = Unchecked RELast file
 - 128 = Checked DEFerred file
 - 129 = Checked SEQential file
 - 130 = Checked FileCom file
 - 131 = Checked USell file
 - 132 = Checked RELast file

Track of first block in file

Sector of first block in file

File name padded with shifted spaces (K10001000)

Relative file — track of first sector of file

Other file types — Not used

Relative file — Sector of first sector of file

Other file types — Not used

Relative file — Length of record

Other file types — Not used

Not used

Only used when disk is SAVING or CRASHING a file with "DISK"

Number of blocks in this file

10

```

10 DIM CHRS(1) : CHS = 1
20 CSCLS 1000
30 FOR I = 0 TO DP - 1
40 PRINT CHRS(I) CHS
50 NEXT
60 END
1000 REM +-----+
1000 REM READ THE DIRECTORY
1000 REM +-----+
1000 DF = 0
1000 OPEN "LIBT\A\T" 
1000 GET #5,TB : CAT #LT,TB
1000 GET #5,TB : GET #LT,TB
1000 IF TB = "" THEN CLOSE #5 : RETURN
1000 GET #5,TB : GET #LT,TB
1000 GET #5,TB
1000 IF TS = "DIRBOMI AND TBCD" THEN
1000   TS = ""
1000 IF TS = "" THEN 1000
1000 TS = " "
1000 GET #5,TB
1000 IF TS = " " THEN TS = " "
1000 TS + TB : GOTO 1120
1040 BDFDP = TS : DP = DP + 1
1040 GOTO 1000

```

In one respect the disk drive is a little less useful to us than the Datassette recorder. When you run an entire program for a required time on tape, all that you have to do is rewind the tape and issue the **SAVE** command — the previous program will be overwritten. Now go with the disk drive, and it is specifically designed to prevent you from making the mistake of accidentally overwriting a file by unwittingly saving another of the same name. This is fine in most circumstances but, when successive versions of a program are saved, it can become a little tiresome. The Disk Operating System (DOS) provides a facility to overcome this problem in the form of the modifier **(B)** attached at the front of the name of a file (whether a program file or any of the other kinds described later) — with the exception of relative files.

When the DSS contains access to a file which begins with "001" it immediately assumes the current date is in use when there is a program with the same name as the specified filename less the "001". If this is not used, then the program is deleted normally. If there is a program of the same name, the program being SAVED replaces it on the disk — the previous version will now be available since it is unregistered.

100

A state of confusion has to be avoided over the use of "click", due to the fact that the computer which runs the facility has a "log" of clicks which are becoming full, yet you can't determine from this the use of "click" will automatically when files are on the click. The reason for this is that "click" seems, under some circumstances, to fail to register in the Block Allocation Map (BAM) the current position of the sectors on the disk which it has used for which it has freed, so that subsequent files are SAVED in places they should not.

There are several solutions to this problem. It includes a VALIDATE com-

mand in line 2 of the little SAVI routine earlier in this article. This necessitates the 16450 and ensures that there will be no corruption, the only drawback being that it can take longer to 16450.DAT than if done in memory (a disk). 2) Start off by calling the program something like T32T32 and, each time you SAVI, LIST line 2 and change the number at the end of the program name. This is probably simple but it does take up a lot of disk space while a program is being developed. If I ignore the bug ... it will very seldom, if ever, affect you. 4) Best of all, use RATTNAME and SCRATCH, two housekeeping commands, to create a much more organized and useful version of RATTING routines and other types of file.

100

The process of keeping a valuable program safe does not end once you have stored it on a single disk. Disks can be damaged or accidentally corrupted in many ways. If a program is worth keeping, then you should always have a second copy of it stored somewhere safely away from where you normally keep your disks.

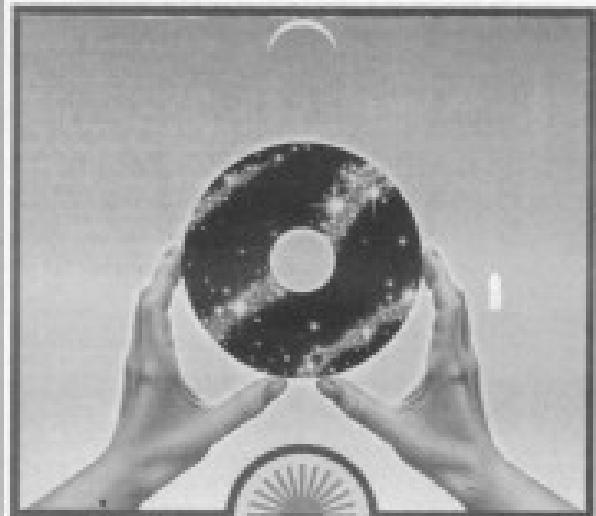
In addition, don't neglect the relative safety and reliability of tape for backup copies of important material. A serious disk drive fault can be extremely frustrating if you only copies of this required program are on disk. If expansion is anything to go by, more people starting out with a disk drive will ignore this advice, at least until the first occasion on which they really lose a program on which they have been working.

In last month's article, we included a brief discussion of the silk disease. Here is

```

10 OPEN 15,8,15 : OPEN 8,8,* 8"
20 DIM D$6000
30 GOSUB 1000
40 FOR I = 0 TO DP
50 T = ASC(CHR$1) : IF T<128 AND
T>=100 THEN PRINT NEED
500HBLA,000
60 NEXT
70 CLOSE 8 : CLOSE 15
80 END
900 REM -----
910 REM READ DIR. INTO DD1
920 REM -----
930 DP = -1 : NT = 0 : DS = 0
940 ER = NT : L = 200
950 PRINT "D,"; DS;" E" ; ER; DS
960 PRINT DS;"L,"; DS;"P" ; DS
970 CRT=875 : NT =
980 ASC(CHR$1)-CHR$00
990 CRT=875 : DS =
1000 ASC(CHR$1)-CHR$00
1010 IF DS = 14 AND S = 5 THEN 1040
1020 PRINT DS;"L,"; DS;"P" ; DS
1030 DS = 1 : DS = 7
1040 CRT=875 : SET=875
1050 DS = DS+1
1060 DS=DS-1
1070 FOR J = 0 TO 29
1080 CRT=875
1090 DS=DS-1 : DS=DS-LEFTS
1100 DS=DS-1 : DS=DS-1
1110 DS=DS-1
1120 DS=DS-1
1130 DS=DS-1
1140 DS=DS-1
1150 DS=DS-1
1160 DS=DS-1
1170 DS=DS-1
1180 DS=DS-1
1190 DS=DS-1
1200 DS=DS-1

```



we have taken the function of the directory, in allowing the user to examine the contents of a disk and in allowing the Disk Operating System to find specified files on the disk, under the granted. In this article we shall take a brief look at the directory, its layout and the way in which it may be directly accessed by the user.

In last month's article the overall layout of the tracks which make up the directory is given. Examining the table shows that the directory is held on track 18 of the disk, beginning at sector 0. The first sector of the directory is given over to the Block Allocation Map, but the remainder of track 18 is reserved for the details of individual files on the disk. Each of these sectors is capable of holding the details of eight files. Given that there are 17 sectors on track 18 of the disk, simple arithmetic shows that the maximum number of files which the disk can hold, regardless of how much space is free, is 136, or 1088.

Within the overall structure of the directory, the format of the entry for a single file is given in Table 1.

The file types, stored in byte 8 of the entry, can be made use of in an MS-DOS/BASIC program, where file types are altered to separate files which were registered in the directory as having been deleted.

Formats

The first track and sector bytes, and the filename itself, can be used by a program to trace through the sectors allocated to each particular file and then to display the name of the relevant file against each sector on the disk. In normal use, the purpose of these bytes is to allow the DOS to search through the directory for a specified filename and then to find the beginning of a file which is then instructed to access.

Relative files are in fact made up of two quite separate sections, one containing the data and the other recording where the sectors holding the data are on the disk. The table shows that the start address of this second part of a relative file is held in bytes 19 and 20, while the fixed length of each record in a relative file is held in bytes 21–24.

Bytes 25 and 26 are new to us, but their use is quite simple. When a file is created or opened, using the 'right' modifier to specify that any previous file of the same name and type is to be overwritten, these bytes serve the purpose of holding the starting track and sector until the new file has been created.

Directory

Finally, when the directory is displayed for the user, the size of each file in terms of the sectors used is given with it, and this figure is stored in bytes 29 and 28 of the file entry.

In all, each individual file entry in the directory takes up 39 bytes (39.75). In order to update the eight possible entries regularly within the 256 bytes of the sector, two extra bytes are added to the end of the first seven entries. These bytes contain no useful information, their purpose is solely to allow the DOS to scan along the directory in steps of 32 bytes.

There are two main ways in which the directory may be read: 1) By loading it into memory with the command LOAD "3", DEVID, where DEVID is the device number of the particular drive. When loaded in this way, the directory is treated in much the same manner as a program file, and any program presently in memory is lost. Loading is possible because the "3" indicates to the DOS that it has to translate the directory as it is on the disk into program file format, treating each entry as if it were a

program line, supplying the zero bytes to handle lines and space for link bytes. In other words, the format supplied to the 34 when the LOAD "3" command is entered is entirely different to the format of the directory on the disk itself.

2) By reading the directory from the disk under program control. The "DOS support" software provided free with later 1541s provides a neat means to accomplish this and puts the contents of the directory to the screen without interference to the current program. It is, however, quite possible to read the directory from BASIC. Given in Figure Two are two short programs which will load the contents of the directory into an array, the first by reading the directory file much as a program file would be read (see Chapter 8), and the second reading the disk more directly.

Arrays

The DOS supplies the directory in the form of a program file, with every filename built into a separate line and the whole thing properly structured with link bytes and so forth. There is no point in trying to compare what is being read by the GET statement with the contents of the table at the beginning of the chapter, since there is almost no relation between the two. What is being read here is not the directory itself but the translated version of the directory supplied by the DOS.

Figure Three gives a program for reading into an array from disk.

Lines 1000–1040: This section controls the execution of the program. As these main functions are to open the user channel and call for the allocation of a disk memory buffer, to call up the test module, and then to print out selected lines from the array *Dir*.

Lines 1000–10000: The overall function is to read the contents of the directory into the array *Dir*.

Lines 1000–5000: The contents of a single sector are read into the buffer and the buffer pointer set to the beginning of the buffer. The first sector to be read will be track 18, sector 0.

Lines 1000–10000: The first two bytes of the sector, which are pointers, are obtained and stored in the two variables NT and NS, standing for Next Track and Next Sector. On the first pass through the routine, the sector picked up will be the RAM, so the program immediately moves on to the next sector.

Fig 4

```

50000 C0000 30000
50000 BP0000
50000 BP0000
50000 BP0000 READ 1541 DIRECTORY
50000 BP0000
50000 BP0000
50000 BP0000 DP = 0
50000 OPEN ALDEN,0,"3"
50000 GET = $17 : GET = $17
50000 GET = $17 : GET = $17
50000 IF TS = "" THEN CLOSE 3 : RETURN
50000 GET = $17 : GET = $17
50000 GET = $17
50000 IF TS = "" THEN CLOSE 3 : RETURN
50000 GET = $17 : GET = $17
50000 GET = $17
50000 IF TS = "" THEN CLOSE 3 : RETURN

```

Lines 11000-11050: The buffer pointer is set back to the beginning of the block, then the disk file entries contained in the sector are successively read. This involves clearing the two unused leading bytes and then obtaining the next 30 characters. The 30-character query is then placed in a line of the array D\$15.

Line 11050-11100: If the next track pointer indicates track 0 it this stage it is a sign that the sector which has just been dealt with is the last in the directory.

Given the facilities of the system provided by the LOAD "F" method and the DOS support facility to open the directory, there are few occasions on which it is worth reading the directory directly. One use, however, might be whenever an operation is to be performed on multiple files. Very few commands could be used with the pattern matching facilities that the 1541 supports. With a little bit of programming, however, it is relatively easy to construct routines to carry out an operation on a whole series of files which match a certain pattern, and this depends on the ability to read and make use of the information contained in the directory.

Figure 4 gives a program which will repeat an operation on a number of files.

Lines 21000-21150: This module can read the filenames from the directory using the first of the two methods illustrated in the second section of this article.

Lines 21200-21250: These lines compare two strings, one of which is the name of a file taken from the directory, the second being a string input in the user module

which is the pattern against which all the disk files are to be matched. The pattern may be set up using the "*" and "?" indicators. The only important product of the module is the value of the variable SAMPL. If the filename being considered by the module matches the pattern, then the value of SAMPL will be left at minus one, otherwise it will be zero when execution of the module ends.

Lines 22000-22100: This section is in the main control module, which first calls up the module at line 10000 to read the directory into the array D\$15, then uses successive file names as the preceding module for comparison with the pattern input by the user. An extra facility is provided in the form of the creation of TBL, which records the type of file for the user to make of this in the current program but you might like to employ it to exclude certain file types from an operation, regardless of their name.

Module

In actual use, these would need to be another module specifying exactly what action was to be performed on a file which matched the pattern. This extra section would be written as another subroutine and would be called by the DOS\$100 at line 11100. Note: Since there is no valid line number at 31100, the routine cannot be run successfully in its present form — you must first add the user section specifying the action to be performed. Given below is an example procedure illustrating the use of the REPEAT facility.

(1) Enter and SAVE the REPEAT program given above.

(2) Take a disk which contains no important files (something may go wrong if you format a new disk and SAVE it as three files with different names — the content of the file is irrelevant but the filenames should be more than 8 characters long).

(3) LOAD the repeat facility and amend it by entering the following new or changed lines:

```
10100 GOSUB 34000
34000 READ*****
34001 READ RENAME ALL FILES
34002 READ*****
34003 OPEN (1,1,1)
34004 CL$15= "RENAME??" + N$ + " =??" + N$ 
34005 PRINT T,B,L,N
34006 CLOSE 11
34007 RETURN
```

(4) SAVE the amended program under the name REPEAT1.

(5) RUN the program and, when asked to enter the pattern, simply press RETURN which enters a single asterisk, indicating that any filename will be acceptable as a match.

(6) When the program terminates, load the directory and you should find that every one of the files on the disk has a "?" at the beginning of the filename. If so, you have successfully carried out a procedure which would be impossible by means of normal pattern matching. ■

The Commodore 64 Disk Companion, by David Lawrence and Mark England, is published by Alexander Books at £7.95.

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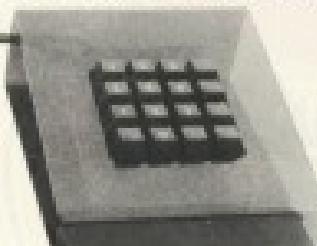
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100

For example, the characters 'big' or 'stupid' may well have mapped to the C++ idiom `big_stupid` into the header file `big.h`. Complete with a corresponding program to define the tiny characters. In operation just `put on the "stupid" stock` to select `big_stupid`.

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ANSWER

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三

As you will always do it, I am very busy.
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The box art features the word "TERRORIST" in large red letters on the left. On the right, there's a black silhouette of a person holding a rifle, with a target reticle over their chest. Above the target is a small plane with a bomb. In the center, there's a map of the United States with a red circle around the Midwest. Below the map is a smaller inset showing a plane flying over water.

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 - Q:** Where do I get one?
A: Ring us now on 08285 62851 (24 hours) to place your ACCESS or VISA card order, or complete the order form and send it to us today. (Prompt delivery promised). Autocalc 64 is available only direct from SuperSoft Spreadsheet Software.

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ANSWER — **ANSWER**

本章所讲的“批判性思维”是相对于“创造性思维”而言的。

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RICHARD SHEPHERD SOFTWARE

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Cracking the code

Book: Mastering Machine Code on your Commodore 64

Author: Mark Greenfield

Publisher: John/Janice

Cost £12.95

Reviewer: E. Whittlesey

I am usually very wary of any book that claims to be able to teach you something quickly and easily, especially when the subject in question is M/C. However, in this instance, the author's claim is not too exaggerated.

The book is well laid out in sections that follow one quite well from each other. The style is easy on the brain and each new topic is adequately explained with example programs.

The book begins with a "Tutorial" of all the Assembly commands and programming modes of the 6400 chip. Also included here is a listing of SUPERMON — a \$518 BASIC monitor — for use on tape. Unfortunately, I could not get the program to work for me. Although it was being READed on the tape, it refused to come out of holding when added to LOAD. This is also a more obvious error that tries to start you off at the wrong memory location. If you don't have an assembler of your own to use on, you could have a problem.

Section 2 shows you how to use your newfound knowledge to great advantage. Topics covered include memory access, sprite manipulation, interrupts, Maths, Random and Hi-res graphics. There is also a subsection showing how to implement basic commands. All these subjects are well explained and are shown to work by some excellent routines that could easily be used to good effect within a larger program.

Section 3 contains all the ROM routines and explains how to use them. An Appendix has the usual contents — memory maps, kernel jump tables, ASCII charts, etc.

Considering the subject matter, the book is very readable as well as being instructive and I think the author is to be congratulated for his efforts. For anyone wishing to learn M/C on the

64, I would recommend this book ... but with some reservations ... **COMMODORE** **SUPERMON** listing.

Manual labour

Book: Getting the Most From Your VIC-20

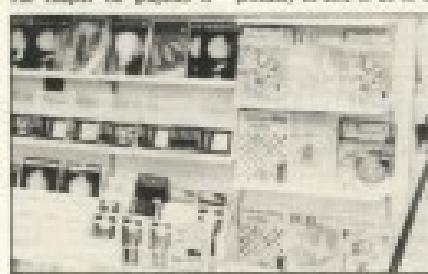
Author: Mark Edwards

Publisher: Prentice-Hall — Micro Per (UK) £14.95

Reviewer: David Stiggydson

Here is a book that picks up where other guides and manuals leave off*. So reads the publisher's blurb. Personally, I would say that the manual it picks up from is the one supplied with the machine by Commodore. However, if you do not wish to delve quite so deep into the VIC as the Reference Guide does you, then this book will make an excellent second or third addition to your computing library.

Section one takes you step by step through many small programs. The programs range from simple point runs and bars to displays. These are effectively, in quadratic equations, maze designs and even how to incorporate a joystick into your programs. The chapter on graphics is



excellent, one of the clearest I have seen. Anyone who is unsure on just how to obtain and use User Defined Graphics should find that this section will answer about 99% of their questions.

In Section two, there are 18 application programs ranging from calculating your chequebook in a maths test. All the programs should fit into the unexpanded VIC and, as character codes are used in the listings instead of control

characters, you should have no problems entering them. One thing I do feel however, is that some of the programs could be tidied up a little and many are could have been made of multi-statement lines. Otherwise, an excellent book for the beginner, and quite a useful book for the more advanced user.

Worthy but dull

Book: Basic Mathematics for Commodore Computers

Author: Eddie Adams

Publisher: John Wiley

Cost £10.95

Reviewer: Dennis Dacewicz

Eddie Adams makes no claims to having the Vic — Pic — C64's graphics or sound potential. His Basic Mathematics constitutes a "no frills" library of modules designed to facilitate sorting and conversion operations of the "square kilometers to square miles" and "Dynes to Newtons" type. They will run on most members of the Commodore Pic family and, with minor amendments on many other 'Basic' micros.

If you are the kind of chap who regularly needs to convert, say, Radian degrees into Kelvin degrees, you will probably be able to do so on

A useful reference tool to have on your shelf, should you ever need a program to calculate post maximization schedules or reader influences or memory size. Measures per square metre, litres, metric, but one which, I fear, offers little genuine benefit and will less fun value to the average micro-user.

Well in advance

Book: The Advanced Commodore 64 Handbook

Author: Peter Lupton and Fraser Robinson

Publisher: Century

Cost £12.95

Reviewer: Phil Barnes

As I suppose you all are no doubt aware of the fact, who is producing in Basic and would like to go further. You have received Commodore's *Programmer's Reference Guide* but finds parts of it too technical. This would particularly like to experiment with sound and Hi-res graphics, in Basic and Assembly, so would understand the Basic Interpreter and to add a few extra commands to the Basic. The trouble is that you have been unable to find a suitable book on micro-pc.

Look no further! This superb volume is the very thing you need. Intended as a companion to the Commodore 64 Handbook for the same author, it manages to prove a well-written, informative and useful volume for any beginner's handbook. As well as covering the aforementioned subjects, it provides a comprehensive guide to the use of disks and printers in a manner far superior to Commodore's own offerings. Add to this numerous listings of program examples, a full bibliography, and you have a publication which is hard to beat.

This is indeed a book to dip into at random and explore in depth. It is packed with information presented clearly and logically, with several helpful appendices. It would almost be worth £14.95 for the Hi-res routines alone. My only criticism is of the index, which is practically non-existent, but compared with the rest of the book this is a minor irritant. Highly recommended!

ANSWER BACK

Cricketer stumped

I HAVE THE complete records of my cricket club going back 25 years. Using my 48 I should have no difficulty in coding details of every match, but I should like to be able to sort out individual performances and accumulate career statistics for the players — several hundred over the years. Can you advise me on a program which would carry out this statistical sorting, collecting, averaging, or do I have to set about writing my own program?

D J Ross

Brentwood

THESE ARE several commercial databases which could help you out, such as Superbase and Masterbase. However, you will have severe limitations if you're using a 48K disk drive because of the amount of information you need to store.

You may need a CBM 8250 double disk drive which can be driven from a 48 using one A25 IEEE interface. It may be possible to use a 1541, but it would require a lot of planning and you would have to use many disks, with the restricted sorting which would result. If you use one record per disk, and each record stores details of players, scores, and so on, then you multiply by the number of matches per year and by 25 years, you'll find that an enormous amount of disk memory is required! If you have to use several disks, you're limited by the number one disk at a time.

Two pass assembler

I USE THE Doctor Watson series assembler from Honeyfield on my Vic 20. Recently I have read about a new program with a "two pass" assembler. Could you explain the difference between

"two pass" and a normal assembler?

J J Thorndycroft
Harrowgate
Warrington

MC6801 ASSEMBLERS use the "two pass" system by which forward addresses are calculated on the second pass. Using a label for a forward address which is not defined until later in the program causes the code to dealt with by a single pass assembler, which would report an error instead. One pass assemblers can only deal with already referenced labels, but the two pass assembler has the reference from the first pass.

Don't overwrite

I HAVE A 64 and am learning machine code using the material printed in May's Computer Horizons. However, I don't want to destroy any of this program when I store the machine code. So how do I protect the basic programs from overwriting?

P G Brants
Warrington
UK

TRY USING the positions \$C800 to \$CFFF, which gives you 6500 bytes for code. Alternatively you could lower the top of Basic to protect your machine code programs from being overwritten by Basic variables. To lower the top of Basic to \$D000-\$DFFF, type: *POKE \$A,158*, and then you can also use \$B000 to \$BFFF for your programs.

Brother Vic

I HAVE a Brother EP22 electronic typewriter, which I wish to link to my 48 and use as a printer. However, none of my local Computershops or Brother dealers has any idea as to what cables are needed to link the two. The EP22 has RS232C and several adverts and reviews have mentioned that it is compatible with the 48.

David S Cooper
Waddington
Derby

THEY WILL need a Vic 48A cartridge, available from

Computer dealers. This cartridge plugs into the user port of the 48 and converts the RS and ground outputs into the plus or minus necessary for RS232 standard.

The cable should be connected as follows: pin 1 on an RS232 cable with 20 pins D-type connector, for the printer end connects up pins 1 (transmitter) & pin 2 (ground) and 20 (data terminal ready). Your printer user manual should show which pins relate to the above.

At the computer end connect pin 5 (clock) to serial to the wire from pin 20 (pinout), otherwise as above.

The wires to pins 2 & 3 must need to be crossed over depending on which way the printer interface is implemented.

\$1.20+ £1.60, and they will arrange to exchange for an updated version. It may be that the Brother programme also have some difficulty with your Centronics interface — contact Brother on 0845 773888 to check.

Cartridge loading is by far the quickest and most reliable form of software loading. The main disadvantage is that carriage connection and disconnection of cartridges may lead to damage of the cartridge slot. You could consider investing in a switchable multi-slot mechanism to alleviate this problem.

1520 and Easyscript

I HAVE JUST bought Easy Script to use with my 48, 1541 disk drive and 1520 printer/plotter. Problems arise when I try to print on the 1520, with odd messages appearing on the status line. The 1520 itself is working adequately.

Margaret Evans
Padiyai
Scotland

HAVING checked EasyScript on my 48 and 1520, I can advise you that it should work as follows. Press "P" and "T" for output, then "P" to set the device number, Enter 6 to request three RETURNs, and exit from printer mode until you have entered the text you want printed.

You'll need to use secondary addressing to use the 1520 with EasyScript. Examples: read one to be preceded by the control character \$A2,\$A1 gives one character \$E,\$E,\$C; \$A2,\$A1 gives \$E,\$E,\$E,\$E,\$C (\$E is CR/LF) and \$A2,\$A1 \$E,\$E,\$E,\$E,\$C. Using \$A2 gives 10 characters per line: \$A2,\$A1 \$E,\$E,\$E,\$E,\$C gives 10, \$A2,\$A1 \$E,\$E,\$E,\$E,\$C gives 10, and \$A2,\$A1 gives 10. Finally, \$A2 ends the print.

If you need help with a technical query or problem with the *Jack Cohen*,
Computer Horizons,
123 Little Newport Street, London WC2R 8QD.

Superbase sorted

I AM HAVING a problem with the Superbase program. Having loaded the program from disk and inserted one of my own data disks, I can print or display across 80 columns once only. The current line defaults to all columns and no primary or secondary command of any sort will cause the output to return to 80 columns. In needs a QUIT and reload to do the trick.

My second problem is in inability to get any printout from cartridge-loaded programs. Calculate and Diary 4.0 from Wally are both 48 compatible, but despite trying all combinations of device numbers I invariably get the message "DEVICE NOT PRESENT". Both programs behave perfectly otherwise. If the difficulty is one of printer incompatibility, how come I can achieve excellent printout over 80 columns from Easyscript? Finally, what are the pros and cons of disk and cartridge?

Robert Law
Cork
Ireland

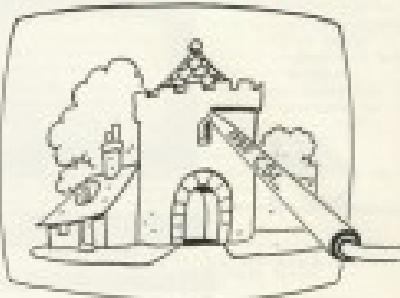
VERSIONS OF Superbase for the 48 previous to V. 1.09 have a problem with Centronics interfacing. Contact Precision Software,

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electron
BBC MICRO

Meet Percy & Monty

Win two games for the 3D from Gremlin Graphics in Tony Roberts' contest

LIFE IS never boring at the Hell Rock Micro-Club... this month they're all playing Dungeon Adventures, and things have become so heated that Xena, Yvonne and Zee have all built cardboard models of the Dungeon in an attempt to outdo the others.

One of them has got it wrong, however, and will come to a sticky end. Look at the three diagrams and decide which is the odd one out — each time is viewed from a different angle, remember.

If you think you've solved the puzzle, complete the information in an apt, unusual and original manner in fifteen words or less, and send your entry with your name and address to Competition Corner, Commando Magazine, 12-13 Little Bromwich Street, London W1B 3RS.

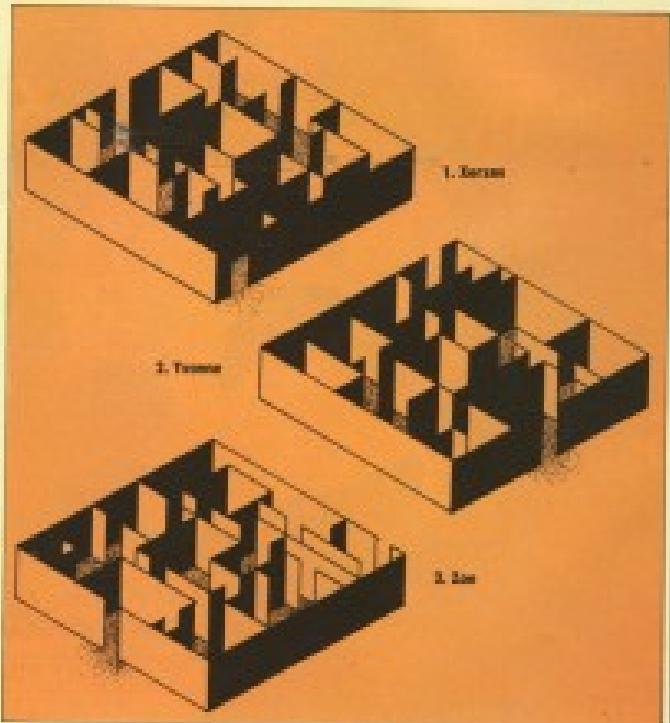
The lucky winners will each receive copies of the Gremlin Graphics games for the 3D, Percy the Piggy Pigman and Monty Maze, which cost £7.99 in the shops.

Percy the Piggy Pigman is a fast-moving arcade game written by Tony Crowther, in which you must help Percy build his nest and avoid speeding cars and other hazards. Monty Maze features Mr Arthur Scargill and his Flying Pickets, out to stop poor Monty from collecting coal. From the dangerous mines, it's another Tony Crowther spectacular.

So the tie-breaker is 'Who likes to run a Gremlin through my 3D because...?'

Normal competition rules apply.

The winners of Argos's MicroNet competition are Simon Jeffery of St Asaph, Caroline Butterworth of Bagshot Regis and Steve Cowell of Widnes. Each winner will receive a communications cartridge and modem which will enable the 3D to be linked to the MicroNet network service.



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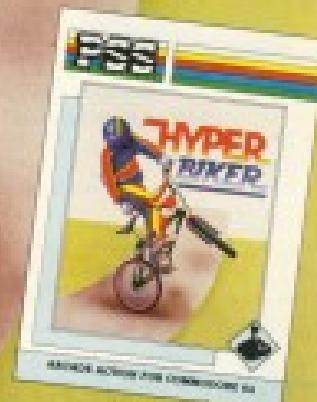


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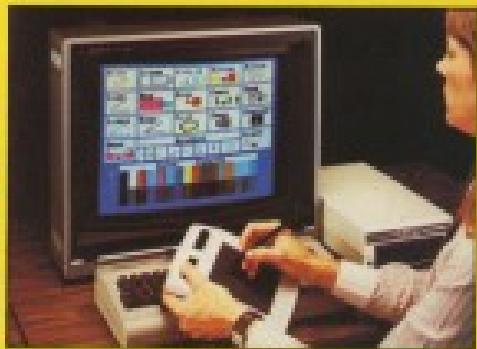
EVENTS

1. Straight Race 2. Obstacle Race 3. Wheelie
4. Long Jump 5. High Jump 6. Bumper Bag



KoalaPad TouchTablet

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